Research on better resource allocation methods for a software development company.

Case: Code Pilots studio

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The purpose of this thesis was to study ways of improvement of the resource allocation in a software company, as well as the development of motivational KPI for developers.

The thesis consists of 5 chapters each of those plays a special role and contains important information for the reader to understand the results of the work done presented in the end.

The results of the thesis include developers productivity KPI developed, compiled lists of operational procedures of company employees, a template of employee cards, as well as a book of company values.

The results answer the main questions of the thesis and are the desired findings of the commissioner company.

Keywords

Resource allocation, software development, KPIs, employees, operating procedures, employee record, company values

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1 Introduction

Computerization is a complex and extremely long process, taking place practically all over the world. Modern technology is being developed at a rapid pace, and for the convenience of device management, more and more sophisticated software is required. For the last ten years the creation of various software products for personal computers has evolved from the occupation of single-player programmers into an important and powerful industry. The needs of people are growing; projects are becoming more large-scale and budgetary. Requirements are growing; attention is paid to strict time, resources and risks. In such circumstances, there is a need for software development companies to use approaches and standards which provide more efficient predictability and delivery of results.

Against the backdrop of increasing complexity of the products being created by software development companies, there is also a problem with the organization of the effective work of teams involved. The solution of it can be the introduction of a certain set of formalities that will force developers to perform their duties qualitatively and on time, but will not break the light atmosphere in the team. If the development methodology is used effectively, this goal can be achieved.

In this way, the purpose of the thesis is to study basis for allocating the company's resources, the result of which will be the rules made and template for developer's KPIs developed specifically for the commissioner company that can help this company to perform more profitable work in the future.

1.1 Thesis background

This thesis topic was proposed to the author of the work by a company in which she had a summer internship. The company – Code Pilots - is a successful studio of software development located in Saint Petersburg, Russia. However, some shortcomings that required improvement were identified in the work of the studio. This was the reason for the collaboration of the author of the thesis and the company in writing this paper.

1.2 Thesis aims and objectives

In order to maximize the profit of the company, it is necessary to study basis of resource allocation, and based on them it will be possible to create an approach for the advantageous distribution of the company's resources while working on projects with the achievement of greater profits.

Certainly, at present time there are many different principles and methods of project management, both abstract and based on specific methodologies, but the goal of this thesis is to study the ways of allocation of resources in a software development company and based on the knowledge gained, to develop a developer KPIs calculation template, set of company values, employee record and work regulations that will be fully tailored to the needs of the specified company.

1.3 Research questions

These are two main questions that this thesis answers at the end:
1. What KPI can Code Pilots studio use to measure developer productivity?
2. What can be done to improve the resource allocation, and with that the total company profit?

1.4 Thesis scope

The scope of the thesis includes the study of the solutions to the problems specified and approved with the commissioner company. This means finding the necessary and relevant information in the authorized sources, the analysis of information gotten from which will serve as a basis for recommendations for the company to improve the allocation of its resources.

1.5 Thesis structure

The thesis consists of five main parts. In the first chapter thesis topic, its background, aims, objectives, main questions, and structure are presented. Second chapter contains the information about the commissioner company – Code Pilots, which are its history, structure, main process of the company, and problems the company wants to solve. Third chapter shed a light on theoretical background on the topic of resource allocation, tells about its methods and tools that can help with the company problems discussed in second chapter. Fourth chapter includes a discussion, which is the application of the gained theoretical knowledge in the third chapter on the situation of the company from the second chapter. With the fifth chapter comes the conclusion and recommendations.

2   Case company – Code Pilots

This chapter contains information about the commissioner company, its history, structure and main process description. This chapter also presents the foundations and reasons why the company proposed the topic for writing this thesis.

2.1   Company's description

Code Pilots is a studio of mobile and Internet solutions. It was founded in 2014 in St. Petersburg by two developers Alexander Trofimov and Dmitry Vasilyev and now the studio has a team of around 20 people.

The main focus of the studio is the development of mobile applications and web-services to solve business problems. In projects, the company applies a single production process approach. The company represents all stages of creating mobile applications and web-services: research and analytics, design, development, support and product development. The company creates products that take into account the specifics of each project.

The main goal of the studio is to assist in the development of its clients' business projects by providing professional and high-quality services in the digital sphere. The main focus of the studio is the development of complex niche projects, such as online stores, CRM / HRM systems with a large number of integrations and complex components and others.

The studio has two technological directions:
-   Development of native iOS (SWIFT, Objective C) и Android (Kotlin, Java) applications
-   Web development (PHP, Symfony 2+, Bitrix, Laravel, Vue.js, React.js, Angular.js)

The customer goal of the studio is to provide consistently high quality development services for a reasonable price, which implies meeting deadlines, no bugs, accuracy both inside (code) and outside (appearance) of the developed product.
The employees' goal of the studio is to provide comfortable working conditions, flexible personal approach, and opportunities for professional growth, interesting projects, and a competitive salary level.

2.2   Organizational structure

The studio is a fairly young company and currently has a headquarters of about 20 people working directly in the office, as well as remote ones. The structure of the company can be represented as follows:
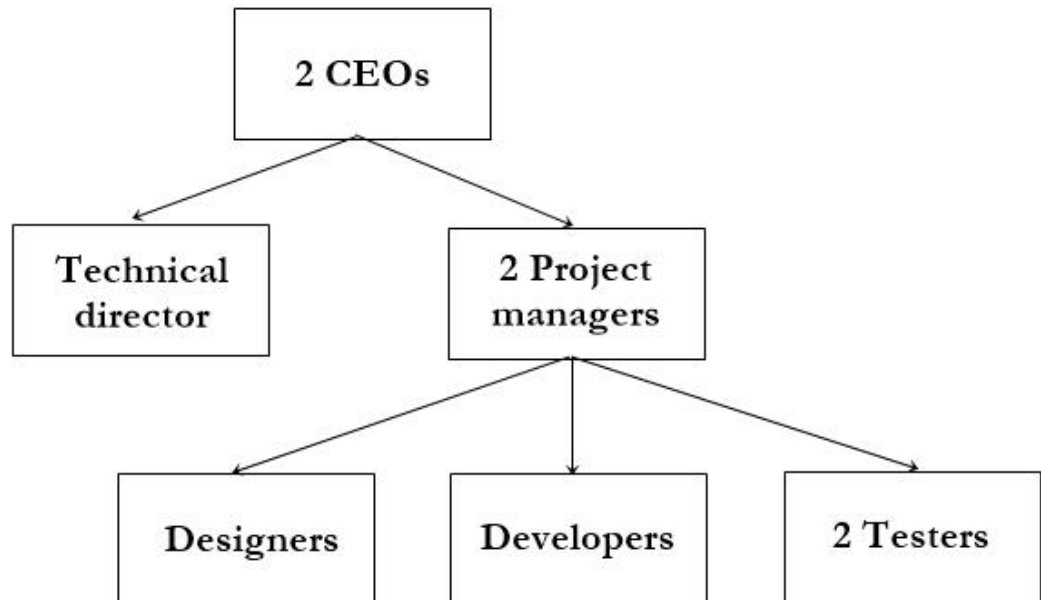

Figure 1 Organizational structure of Code Pilots studio

From the figure presented above, you can see the main structure of the Code Pilots company. At the head of the studio there are two founders who are responsible for organizational issues and lead generation. There is also a technical director who is responsible for the successful creation and delivery of the company's product to the market by managing technical risks and opportunities. As is it supposed to, the company has two project managers whose main task is to manage the project as a whole: design and prioritization, task planning, control, communication, and operational problem solving. The direct work on the products is carried out by the designers, developers and testers in the team.

2.2.1   Core process

One of the strengths of the studio is a well-established development process. The team selected for the project works on iterations of 1-3 weeks. All tasks of ongoing project are placed in YouTrack tracker (commercial error tracking system, project management software). All project development code is necessarily stored in the corporate GitLab system (the system for managing the repositories of the website and the code for Git). The team

performs a mandatory regular code review. Prior to publishing updates are tested on a test server. There are also automated backs up on a secure server.

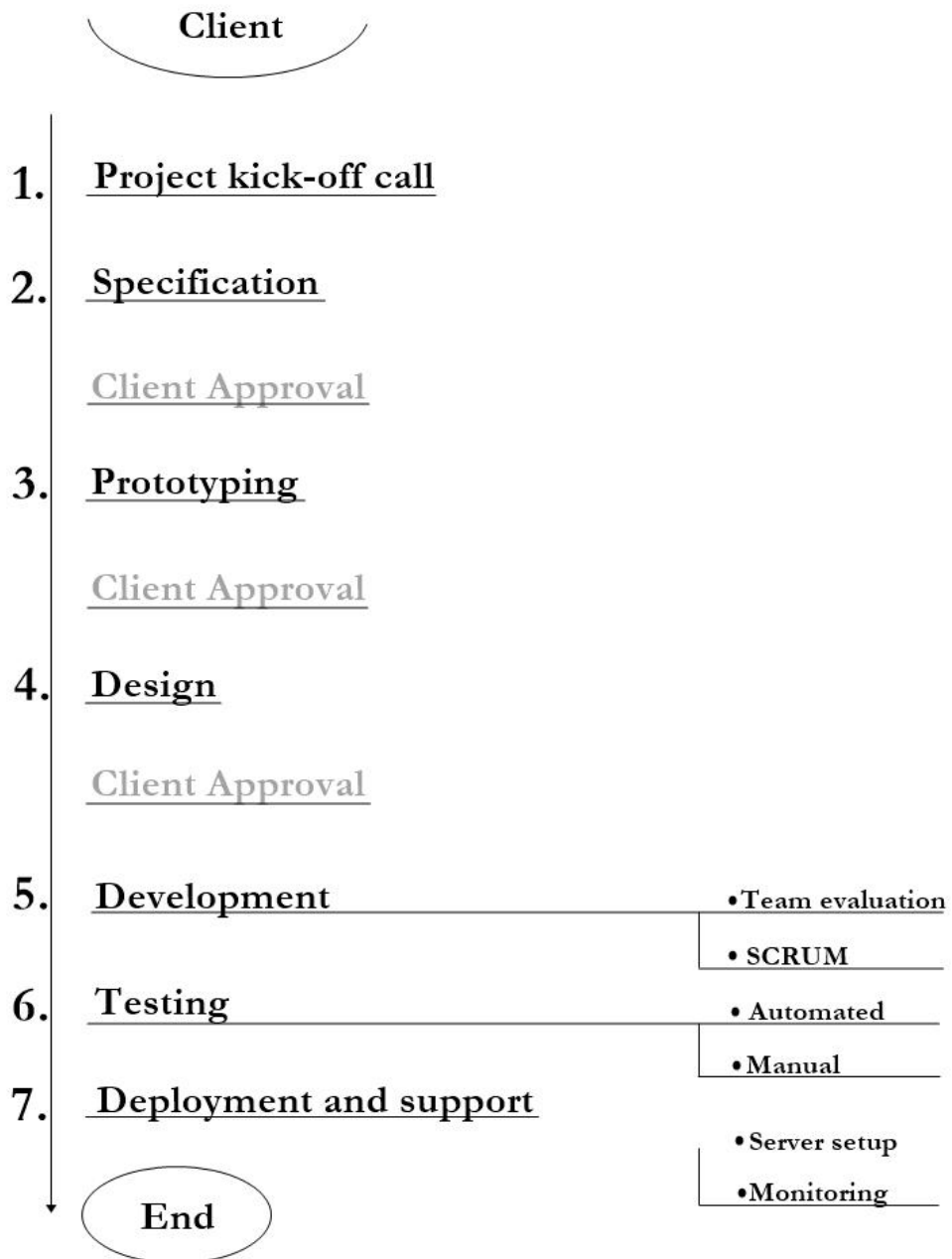The structure of the main process of working on projects in the company is the following:

Figure 2 Main process of the Code Pilots studio

Detailed description of each stage of the process from Figure 2 "Main Process of the Code Pilots studio" conducted by the company is presented below:

1. The main process of working on a project in the studio begins with project kick-off call made by a client.

2. Specification of the project and creation of terms of reference
    work with the customer begins with the completion of the brief, in which the cus-
    tomer sets out his wishes regarding the visual presentation and structure of a
    website or application, points out errors in the old version of the website (if such
    exists), gives examples of competitors' sites. Based on the brief, project manager
    makes terms of references, taking into account the possibilities of software and
    design tools used by the studio. The stage ends when client approves the terms of
    reference.

3. Prototyping
    Work continues with prototype creation. The designer creates an early model of
    the final result - a diagram showing the planned structure and the main design el-
    ements, and the functional of the future site without detailed interface and design.
    The working proceeds to the next stage when the prototype is approved by the cli-
    ent.

4. Design
    At this stage the design of all screens of the future application are created and var-
    ious states for all usage scenarios are drawn. After the design concept is ap-
    proved, the internal buttons and icons are drawn, as well as all other graphic ele-
    ments. When the design is shown to the client and approved, the project continues
    to the next stage.

5. Development
    Developers are provided with terms of reference and application design layouts
    and they begin to "create". Programmers "transform" a static picture made on the
    stage of Design into an interactive working model. At the end of this stage the first
    version of the application is released.

6. Testing
    The testing process includes a variety of checks: the appearance of the page with
    enlarged fonts, with different sizes of the browser window, in the absence of a
    flash player, and many others. Usability testing is conducted as well.
    The detected errors are sent to the fix until they are fixed. The execution time is
    controlled by the project manager. At this stage, the designer is also involved in
    the work carrying out the author's supervision.

7. Deployment and support

The client or his authorized representative takes a look at the finished project and in case everything suits him the company and the customer sign the documents on the project delivery.

Also, at this stage, the customer representative is trained to work in the site administration area.

2.3 Current situation

The chart below presents a visualized picture of the company's projects. The value is used as a percentage of the total number of projects completed by Code Pilots studio.
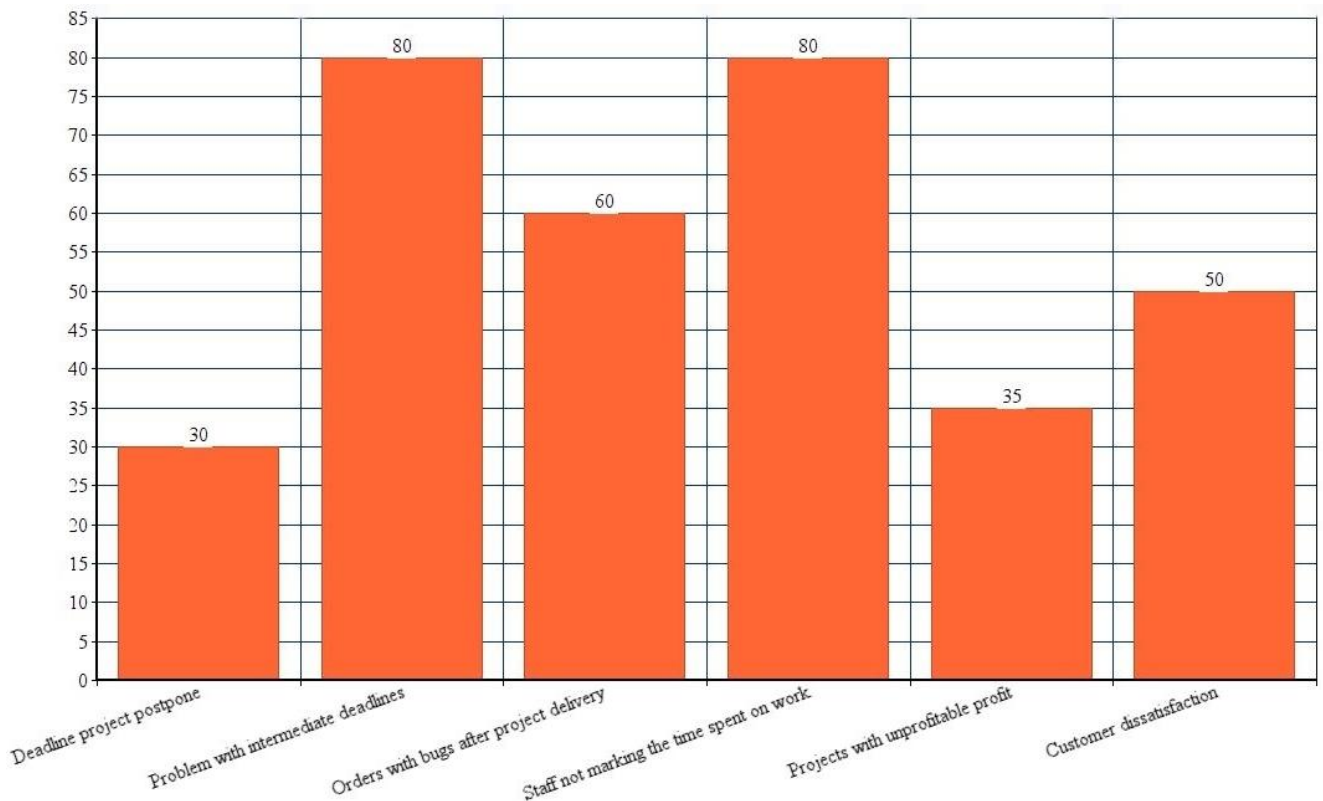

Figure 3 The percentage information about the Code Pilot studio's projects.

In the Figure 3 there is the percentage information about the company's projects is presented. It was identified that around 30 percent of the projects have been postponed from the previously scheduled release date. About 80 percent of the projects had problems with intermediate deadlines. 60 percent of the released projects handled to customers had bugs. In the company about 80 percent of employees do not register time spent on work. About 35 percent of the total numbers of completed projects were closed with a negative profit. Currently, about 50 percent of customers are dissatisfied with the company's work management.

The table below presents a summary of the information about the problems and their effects on the work of the Code Pilots studio:

№	Identified problem	Effects
1.	Large number of bugs	- Customer dissatisfaction - Possible bad reviews about the company (reputation) - Reduced profits (fixing bugs at company's own expense)
2.	Lack of project budget tracking	- Income fall below the break-even point of the project - Inefficient use of available resources - No difference in the priority of tasks
3.	Employees work is not regulated	- Large number of bugs - Lack of project tracking

Table 1. Code Pilot studio's identified problems

In the Table 1 there is the information on identified problems in work of studio and its possible effects. With the help of this table it became clear that the studio has 3 main problems that need to be solved.

The first problem tells about large number of bugs at the stages of development, and most importantly - at the final stage of product release, which leads to postponing the delivery of the project and fixing bugs at the expense of the company.

The second problem is the absence of any system for tracking project budget. This problem leads to the fact that the resources allocated to a particular project are used irrationally, this way leading to a decrease or even negative profit of the company, which should not appear at all in the studio that was created for making profit.

The third problem states that the company does not have any regulations for the work of its employees. Under the regulations the instructions or set of rules of the work are meant, which each co-worker should follow. Since the employees are free to act intuitively (which is not always right), this leads to irrational work, and subsequently to bugs in a code (e.g. developer's work).

2.3.1 Agreed implied results of the thesis

As we can see, the company has certain problems with the management of the distribution of time, money and employees, also called as a resource allocation problem.

After a meeting with a company representative, it was decided that the output of this thesis should include the following:

1. KPIs for calculation of developers' productivity
2. Established operating procedures of the main positions in the company
3. Template of an employee record developed
4. A book of company's values created

3 Theoretical framework

This chapter will shed a light on the theoretical basis of resource allocation, its tools and methods, describing the positive effects that introduction of a template of project budget allocation, basis of KPI and how it can be applied to developers, work regulations, employee record, and book of company's values will bring to the company.

3.1 Resource Allocation

Michael A. Chilton (2014) in his article defines the concept of resource allocation as the process of resources assigning to tasks throughout the life of the whole project.

On the website Smartsheet (2018) the following components of the resource allocation are stated:

1. People - this resource item includes developers, managers, editors, user interface designers, testers, i.e. people with the necessary skills needed to complete the job or project.
2. Time is a resource that determines the total time allotted for the project. By dividing it into periods, one can see if everything goes according to plan.
3. Tools and capital. These resources (special equipment involved, etc.) should be appropriately allocated at the stage of project planning.

3.2 Difficulties of resource allocation

As was mentioned in the article by Michael A. Chilton (2014), the distribution of resources has certain difficulties in execution. The first difficulty is that IT projects are mainly based on renewable human resources. The second is that IT projects are intellectual work, and during the process of project creation colleagues should share information about the work done with each other. In this case, attracting more workers to the team can lead to a slower workflow. The third is that the direct costs of IT projects are labor costs.

3.3 Methods and tools of resource allocation

This sub-chapter presents the information about each of the agreed with the company representative outputs in detail, describing the necessity of each of them and the best practices and recommendations of their creation and development.

3.3.1 Developers' productivity KPI's

Bernard Marr (2018) identifies KPI as a way to determine the effectiveness of a company, project or individual employee in relation to strategic objectives and goals. In a broader sense, KPIs can provide companies with the most important information about their performance, and whether they are moving towards their goals. In this case, well-designed KPIs are an integral tool that shows companies the current level of performance.

Brett Miller (2017) notes that measuring the effectiveness of such an employee as a developer can be difficult, even with a very good set of KPIs. The difficulty is that the performance risk indicators you notice are not necessarily a developer's mistake. There are many sources that can cause the appearance of a problem, and it is worth understanding and evaluating them all.

According to Euric website (2018), KPI for software development are the following:
1. Velocity

   This indicator is responsible for the speed of the work done.
2. Story cycle time

   This indicator indicates the time allotted to the entire team to complete the task.
3. Estimation Accuracy

   This is an indication of the extent to which the final result of the project's costs may differ from the value of a single point used as an estimated project cost.
4. Quality of Development

   This indicator is responsible for the quality of the work done on the project.
5. Quality of Code

   This indicator shows the quality of the code written by the employee.

3.3.2 Operating procedures

According to the Jamie Johnson' article (2018), operating procedures are written, detailed instructions on how to carry out activities. They should explain every detail of the process and be easy to read. A standard operating procedure is a tool that every business should have.

There are a lot of reasons why companies should have operating procedures. Jamie Johnson (2018) lists these 5:
1. They help save money and time

There are situations when the same task is done differently, and it takes more time. If the company has operating procedures, the employee needs less time to complete the task, because of having an instruction.

2. Consistency presence
   Operating procedures ensure the proper completion of the business process, regardless of who works on it.

3. Communication improvement
   Employees do not need to remember every time what the boss said during the hiring interview, because operating procedures make it easier for employees to work with all the necessary steps by hand.

4. Holding employees accountable
   Operating procedures provide an objective view of the employee's work by providing written standards.

5. Creating a safe working environment
   It is ineffective if an employee of the company performs the same task in a different manner. Operating procedures are responsible for ensuring that the worker performs the duties assigned to him in a consistent and safe way.

3.3.3 Employee record

The employee record system is a repository of data of all employees that provides organizations with a comprehensive and central view of the entire organization (CornerStone, 2018).
Employee records help companies analyze information about their headquarters at both the micro and macro levels. These records also help employers save time in their administrative duties. This is an important point, because an understanding of the available human resources has a beneficial effect on the effective management of the business in order to maintain its profitability (Pawar, 2018).

There were several types of employee records that Yatin Pawar (2018) has stated in his article:
1. Personal details
   This type includes basic details about the employee which are necessary for the analysis of personnel policy.

Example: name, age, birth date, gender, marital status, nationality, educational qualification, permanent address, passport number

2. Contact details

   This type is also important, as the employer should keep employee data updated in case one need to contact an employee by phone or mail, as well as in case of emergencies.

   Example: contact number, email address, address for correspondence, emergency contact number, emergency contact person, relation with emergency contact person, medical aim details provided

3. Employment details

   This type includes records of past employee working experience, as well as starting a job on a current work placement.

   Example: employment type, employment status, date of joining, name of bank, bank account number

4. Job details

   Information from this type is able to help with the appointment of employees to new projects or assignment to ongoing ones.

   Example: job description, skills and expertise, location, current project

5. Training and development

   Existence of what kind of training a staff member has completed can help in identifying suitable employees for a project depending on their level of training and success in the area required for the project.

3.3.4 Book of company's values

Company values are a behavioral set that determines how company employees work with each other and with customers. These values help with prioritization of tasks, as well as in making important decisions for the business. Every company should have its own values for positive functioning and constant growth (Pajak, 2018).

There are a lot of benefits that set of values of the company bring to a company. Pajak (2018) stated the main two ones in his article. The first one says that due to having a book of company's values new employees have the opportunity to easily familiarize themselves with the rules adopted in the company. The second one states that existing employees knowing the values of the company try to keep the prescribed values, what in turn unites the team.

On the Internet it is possible to find examples of different values used by other companies. The most common ones are:

- Keeping customers first

   The company is engaged in a business with a direct focus on the client, putting him in priority. Such value allows a company to build long-term and strong customer relationships.

- Being accountable

   This value brings confidence to the team, engaging team members to treat each other with respect and to be responsible for their actions.

- Doing more

   This value inspires employees to do more if it is right, and to help colleagues if they need it (Teamsoftware, 2018)

- Employees

   People are the basis of business, without which the business itself would not exist. Hire the best - and expect the same level achievements from them.

- Innovation

   The pursuit of innovation is in the development of the organization as well as in all aspects of business.

- Profitability

   Economic success allows you to give employees and customers the best tools, services and solutions. Income is not the reason for the existence of the company, but the company exists to provide the best services and products (Workday, 2018)

4 Results

This chapter contains the results obtained by applying theoretical knowledge from various resources to the case of a company and the tasks set at the beginning of the project. Each of the sub-chapters contains a recommendation to a particular task stated in the project, as well as a description of this decision.

Based on the information presented in the 2nd chapter the required work was to conduct a research study and do the following:

1. Create a KPIs for work of developers

2. Establish work regulations for the main positions in the company

3. Develop a template of an employee record

4. Create a book of company's values

4.1   KPI's development

KPIs is a purely business indicator. Apply it to a single developer is unrealistic. How to evaluate the indicator of creative activity? How can one understand that a developer works well and the other is bad from a business point of view? The idea of implementing KPI for developers is not used to make them work, or how to properly say, to motivate for better work.

Here comes a recommendation of what can be done. What if we estimate not so much the work of the developer but the additional burden on the business as a result of its work? Specifically - how much resources the developer spends if he does his work not efficiently enough, which includes hours of testing, analytics, review and other costs that can be calculated.

Of course, the total time and resources spent on development depend on each team member. If one of the team members does his work in bad faith, then this will be seen from the time spent by his colleagues.

If the communications in the team are adjusted, the documentation is in order, and every specialist knows what to do, then we will return to the utopian scenario. But any team takes time to work together; changes of staff and a lack of time also make their adjustments.

The idea of calculating KPI for a developer is to count the time that the team spends on work outside the minimalist scheme, particularly on re-review and re-testing. In other words - anything that goes beyond the linear process or was sent back for revision. In the absence of improvements and savings on this is the direct interest of the business.

For simplicity, I suggest counting in money. Let's take a series of variables:

- D - developer rate (500);

- Hd - hours spent on development;

- T - rate tester (250);

- Ht is the retest time;

- A - analyst rate (200);

- Ha - time for clarification;

- L is the lead rate (1000);

- Hl – overtime used on review.

We take the time spent after the modifications for each employee except the developer. Then the formula will look like this:

$$R = (T * Ht + A * Ha + L * Hl + D * Hd) / D * Hd * 100 - 100$$

The result of its calculation will be the percentage of exceeding the development budget.

Example: The developer spent eight hours on the task. It was returned to him for revision with bugs. He fixed errors for two hours; the lead spent half an hour on the review, and the tester checked for another hour that everything was fixed.

Then we make re-calculation:

$$(250 * 2 + 200 * 0 + 1000 * 0.5 + 10 * 500) / (10 * 500) * 100 - 100 = 20\%$$

We get a percentage. The company spent 20% more resources than needed. It is a little, but within the limits of risks. But if the developer had did his job in even worse quality for two hours, he would have to recheck and refine several times, the percentage would have increased in more times:

$$(250 * 6 + 200 * 0 + 1000 * 2 + (2 + 4) * 500) / ((2 + 4) * 500) * 100 - 100 = 117$$

If the developer approached the task more responsibly, spent six hours at once and re-checked everything - the result of the formula could be 0%. This is called "clean work", and with the current scheme we lost $ 3,500.

You can derive a formula based on a preliminary assessment of the problem, but it is important to remember that relevance will depend on many factors. Add variables:
S - total costs (T * Ht + A * Ha + L * Hl + D * Hd);
Et - task evaluation.

$$Re = (S / D * Hd + (Et * D - D * Hd) / D * Hd) * 100 - 100$$

If we add to the previous example the task estimated time as ten hours, the indicator will be equal to 183, and if we estimate as four hours - 83.

The use of the derived formulas can help a Code Pilots studio in defining KPIs for developers, and thereby improve the work of the development process. In the successful case, the finished products will have fewer bugs, and one will not have to spend the previous time fixing them, which will speed up the process of delivering the project and increase customer loyalty.

4.2 Operating procedures

Based on information from the theoretical chapter 3.3.2 we see that operational procedures have an important role in the work of the company. With their help, each employee can know exactly what his position duties are, so that he will not let anything out of his field of vision. Below are the complete operating procedures for the following positions in the company: CEO, Technical Director, Project Manager, Developer, Designer and Tester.

CEO
- Organizes the work and effective interaction of production units and structural divisions of the studio. - Participates in the development strategy of the company. - Conducts operational financial and economic analysis of the company and divisions.

- Organizes tracks and takes the responsibility for the implementation of all projects.
- Works on the system of motivation (remuneration) improvement of employees of the studio and is responsible for its implementation.
- Responsible for the observance of labor discipline.
- Responsible for the proper organization of office work in the studio, legal and economic study of contracts, contracts, agreements, etc.
- Makes operational plans (monthly and decade) of the studio and approves them.
- Supervises the activities of staff in the implementation of approved plans.
- Identifies and eliminates their own weaknesses in the work of the company.

Table 2. Operating procedures of CEO

Technical director
- Participates in budget planning, exercises control over expenditures on budget items of a studio.
- Conducts documents in the direction of the studio.
- Conducts control of prompt elimination of failures and malfunctions in the operation of equipment and software installed at workplaces.
- Develops instructions for working with programs, draws up the necessary technical documentation.

Table 3. Operating procedures of Technical Director

Project Manager
- Performs project management (quality control, deadlines, budgets and risks).
- Communicates with the customer (coordination of plans, deadlines, requirements, and budgets).
- Performs project team management.
- Performs maintenance of project and technical documentation
- calendar plans
- technical tasks
- functional requirements
- financial reports
- Participates in the sale process and the conclusion of contracts.

- Makes post-project management of customers and additional sales.

Table 4. Operating procedures of Project Manager

Developer
- Develops a technology for solving the problem at all stages of information processing.   - Selects a programming language for describing algorithms and data structures.   - Determines the information to be processed by means of computer technology, its volumes, structure, layouts and schemes for input, processing, storage and output, methods of its control.   - Performs work on preparing programs for debugging and debugs them.   - Determines the scope and content of these test cases, providing the most complete verification of the compliance of programs with their functional purpose.   - Performs the launch of debugged programs and input of initial data determined by the conditions of the tasks set.   - Conducts the adjustment of the developed program based on the analysis of the output data.   - Carries out maintenance of the implemented programs and software.   - Provides the correct technical operation, uninterrupted operation of computers and individual devices.   - Must protect the property of the studio, not to disclose information and information that is a commercial secret of the studio.   - Complies with labor and production discipline, rules and norms of labor protection, the requirements of industrial sanitation and hygiene, fire safety requirements, civil defense.   - Executes orders of the CEO of the studio and orders of the project manager.   - Informs the management of the existing shortcomings in the work of the studio, the measures taken to eliminate them.   - Helps to create a favorable business and moral climate in the studio.

Table 5. Operating procedures of Developer

Designer
 - Makes sketches and performs works on the decoration of publications of various nature, projects, and reports, as well as informational and promotional materials; develops sketches of packaging, trademarks, etc. - Timely and efficiently performs artistic and design work on customer orders. - Develops projects of artistic and technical design of publications according to information received from the immediate supervisor or client. - He gives advice to his immediate client about the principles and options for solving set design tasks. - Create illustrations for texts (graphics, drawings, diagrams, diagrams, etc.), develops new fonts, styles, and so on. - Makes corrections to the projects of artistic and technical design at the direction of the art editor. - Coordinates project sketches with the client and prepare final layouts. - Performs author's supervision of the implementation of artistic and design decisions by the staff of the enterprise.

Table 6. Operating procedures of Designer

Tester
 - Develops plans, schedules, methods and descriptions of testing. - Simulates situations that may arise under software operating conditions. - Works in conjunction with the developer. - Creates test plans, test cases. - Fills database tables with test data. - Performs software testing. - Performs load testing. - Analyzes the results obtained during the passage of the tests. - It classifies the detected errors and stores them in the database for the current software product. - Controls the process of eliminating the detected errors by the software developer. - Communicates with the developers. - Advises clients. - Makes documentation for functional testing.

| - | Participates in the trial operation of software products. |

Table 7 Operating procedures of Tester

4.3 Employee record

Employee card is an integral record in the company register. By compiling a database of employees with detailed information about each of them (in the case of Code Pilots studio), it will be easier for the project manager to select appropriate developers for work on a project that is being planned or is currently ongoing.

Employee record/card should include the following information:

Personal Information	Work related information
- Name - Age - Birth date - Gender - Marital status - Nationality - Permanent Address - Passport number - Contact number - Email address - Address for correspondence - Emergency contact number - Emergency contact person - Relation with emergency contact person - Medical details provided - Name of Bank - Bank Account number	- Educational Qualification - Employment Type - Employment Status - Date of Joining - Job description - Skills and expertise - Past projects - Current Project

Table 8 Employee record information

In my opinion, the most important in the case of Code Pilots company are records about education, work experience, past and present employee projects with a detailed description of them. If these columns in the record are filled, then this database will make it easier for a project manager to navigate the skills of this or that employee, and therefore pick the one that is most suitable for this or that project. This will save time, and after that it will

increase productivity, because the developer will be assigned on the project for which he has the necessary skills, so that he can complete his work in the required time and at the proper level.

4.4 Book of company's values

Based on the information from the theoretical chapter 3.3.4 we can see that different companies have different values that characterize each of them in a practical way. Being a part of a company, albeit not so long, I can point out the following 5 values, which I noticed that the company appreciates, which means that they must be in the book of Code Pilots studio values:

1. Customer

    An important aspect of the work is customer satisfaction with the quality and speed of the work done, on which each employee involved in the project should work hard.

2. To be united with the team and stay enthusiastic

    Despite the fact that each time employees have their own personal tasks to perform, they should not forget that each project is a group work, which means they should consult with colleagues about the tasks and make suggestions and ideas if having any.

3. Professionalism

    Performance of the assigned work at a high level with the minimum number of bugs (the ideal is its' complete absence).

4. Accuracy in the work

    Thoroughness in relation to the details of the tasks is being done.

5. Responsibility

    It is worth understanding that any mistake made can lead to both financial and reputational losses, so it's worth performing tasks responsibly, calculating a step further.

It seems to me that these 5 values personify the work of the Code Pilots studio. If these values are presented to current and future employees, each of them will know exactly what the company lives with and what levels it wants to maintain.

5 Conclusion

The software development market is characterized by tight deadlines and limited budgets. At the same time, due to the growing competition, it is necessary to preserve the quality of the product at the proper level. That is why, having received the statistics of the identified problems of the company, it became clear that changes are urgently needed.

The purpose of this thesis was to find the necessary information to solve identified problems of the Code Pilots studio, which first included a literature and Internet resources review, and application of the gained information on the case company.

Summarizing, I can say that the project was successful. The results of the work are the desired by the Code Pilots recommendations and solutions, which answer the main questions of the thesis. The results include developers' KPI created, operating procedures of the main positions in the company established, template of an employee record summed up, as well as a book of company's values created.

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