# Analyzing Project Team Members' Expectations

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**Abstract.** This paper describes an approach for analyzing the project team members' expectations to achieve the personal goals as well as the project objectives. There are described four types of expectations and suggested the expectation map as an analytical tool. The paper introduces the important antipatterns and the process of expectation map analysis.

**Keywords:** Project Manager, Team Member, Project Objective, Personal Expectation, Expectation Map.

## 1 Introduction

The key to a successful team is the alignment of objectives within the team. The challenge of the project manager is setting a common goal the entire team is willing to pursue. If the case of lack of a common goal, team members who disagree with the objective in hand will feel reluctant to utilize their full effort, leading to failure to reach the goal.

Software project teams coalesce and become more productive when they are coordinated [1]. It takes time for teams to progress through the Tuckman stages of forming, storming, norming, and finally to performing to optimize team output [2]. Developing the project team improves the people skills, technical competencies, and overall team environment and project performance. The project managers should identify, build, maintain, motivate, lead, and inspire project teams to achieve high team performance and to meet the project's objectives.

The team can work towards attaining the goals only if they exactly know what management expects from them and what role they hold in the project. The project manager needs to provide a structure for the project team and set expectations and priorities as well as assign roles carefully. The expectations, as well as the overall goal, should not be fuzzy.

The problem is the team members are not the predictable systems, and the project manager is not able to use optimization techniques to achieve the goal. Therefore, the project manager needs the tool supported the process of coordination the personal objectives with the project goal; he/she has to be careful about the persons' objectives.

For establishing persons' objectives, the understanding of persons' expectations that will impact the effectiveness and motivation of team members is a constructive way.

People are motivated if they feel they are valued in the project team and this value is demonstrated by the attention to their expectation.

In the paper, we propose a simple tool for coordination of project objectives with personal expectations and describe how to use it for analysis of current situation.

## 2    Team Common Goal

Team common goal is what separates a high performing team from a bad project experience. Common goals are important because they bring people together and encourage them to communicate problems and results. They allow for a much earlier and faster recognition of problems in the project development.

To fully complete individual's task roles, one needs to have clear expectations about his subgoals, the paths to accomplish these subgoals, and the link between his work and the work of others [3]. Because individuals' roles are embedded in the larger context of teams, the clarity of team goals and individual members' roles in working toward meeting the goals has a powerful impact on team effectiveness

In [4] there was demonstrated that team goal setting was an effective team-building tool for influencing cohesiveness in the teams. Cohesion had been defined as "a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs" [5]. Cohesiveness is the extent to which team members stick together and remain united in the pursuit of a common goal. A team is said to be in a state of cohesion when its members possess bonds linking them to one another and to the team as a whole.

When agreeing and prioritizing workloads with members of the team, the project manager needs to ensure that individual members of the team are happy with their workloads, and not working under undue stress. It is crucial both to the effectiveness and the quality of the working atmosphere of the project team. The project manager should ensure that team members are well prepared, that they understand what their current objectives mean, how they will be measured and what manager's expectations are.

Involving individuals in the process of their objectives setting will improve understanding of manager's expectations and the expectations of the organization. The project manager has to motivate to obtain the objectives as well as clearly demonstrate the coherence between individual objectives and project goal. In other cases, team members might divert themselves to other tasks due to a lack of belief or interest in the goal.

The biggest and most important common goal for a team is to finish the project successfully. However, this should not be the only goal. Many things can bring people together and focus them on results and not on personal comfort. To negotiate the individual objectives effectively, the project manager needs to know the expectations of team members.

## 3      Expectation Mapping

Academics and practitioners agree that expectations play a central role in project organizations. For the latter, these expectations are typically set at the start of initiatives and comprise iron triangle measurements, as well as more refined metrics for expected benefits or user satisfaction. Usually, it pointed at the expectation of stakeholders and senior management [6]. In addition, the researchers and practitioners pay attention to customer expectation management [7]. Let us focus on the expectations of team members, because of them define the personal objectives and cause the behavior during the project implementation.

Usually, there are recognized four expectation types: must, will, should, and could [8]. This classification explains how expectations affect relationships and define potential gain or damage due to gaps between expectation and performance. Different expectation types have different impacts on interpersonal relations and relate to various areas of the project implementation.

Also, by analogy with [9], we can distinguish four types of expectations:

— ideal expectations are visions, aspirations, needs, hopes and desires, related to the participation in the project;
— normative expectations are expectations about what should or ought to happen, mostly derived from what colleagues are told, or led to believe;
— predicted expectations are beliefs about what will happen and are likely to result from individual experiences;
— unformulated expectations are not articulated expectations.

 The most valuable for project manager are normative and predicted expectation because they affect the personal preferences and can be articulated.

The best practice to discover personal expectations is one-to-one meetings. During the series of such meetings, the project manager (or team leader) is gathering the unstructured set of notes (mental or hand-written) about personal expectations of team members. After finishing, he should arrange the notes into a useful model to help understand the expectations of team members, identify holes and omissions in relations between project objectives and personal expectations, and successfully plan the motivation strategy for each team member.

As the model of team members' expectations, we propose the expectation map. The expectation map tool is a diagram representing how the personal expectations correspond to the project objectives (see Fig. 1).
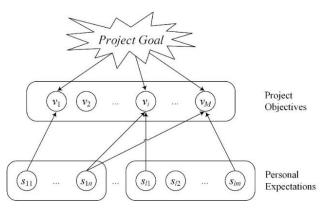
**Fig. 1.** The structure of expectation map.

On the expectation map a set $\{v_1, \ldots, v_M\}$ is a set of project objectives, a set $\{s_{j1}, \ldots, s_{jp}\}$ is a set of expectations of $j$th team member, an arrow between $v_i$ and $s_{jk}$ represents correspondence between $i$th objective and $k$th expectation of $j$th team member.

For example, the $i$th objective is formulated as "To improve customer satisfaction rates by 50 percent by September 06 through improving user interface usability." Let us suppose $k$th expectation of $j$th team member is "To climb on career ladder as UI/UX designer." To visualize the existed correspondence the nodes $v_i$ and $s_{jk}$ should be connected by the arrow from $s_{jk}$ to $v_i$.

Expectation maps clearly lay out the mental perceptions of team members so that project manager may identify disconnects in the personal expectations and project objectives.

## 4 Formal Analysis of Expectation Map

Expectation map is not only the visualization tool but also analysis support tool. Let us introduce the mapping $M$ of expectations set onto objectives set such as $M(s_{jk}, v_i)$ takes place when $k$th expectation of $j$th team member corresponds to $i$th objective. Define a set $S_{v_i}$ as a set of personal expectations corresponding to the objective $v_i$:
$S_{v_i} = \left\{ s_{jk} : M\left( s_{jk}, v_i \right) \right\}$.

The ideal expectation map is formally described as

$$\forall v_i \left| S_{v_i} \neq \varnothing \quad \& \quad \forall s_{jk} \in \bigvee_{i=1}^{M} S_{v_i} \right. \tag{1}$$

In other words, for each project objective there was discovered the set of corresponded personal expectations. The case looks like the most comfortable for a project manager because he can find motivated team members for all objectives. However, sometimes, the ideal map contains the set of conflicting expectations (the antipattern 4.3 described below).

The project manager can prioritize the project objectives accordingly with cardinal numbers of the sets $S_{v_i}$. Therefore, the highest priority defines the objective interested for the majority of team members. In other words, the highest prioritized objectives are the most valuable ones from the team point of view.

Below we describe the important antipatterns for the expectation map analysis.

### 4.1 Unmet Expectation

The antipattern is formally described as

$$\exists s_{jk} \notin \bigvee_{i=1}^{M} S_{v_i} \tag{2}$$

In other words, there is the personal expectation not corresponded to any objective (for example, $s_{l2}$ at Fig. 1) at the map.

The project manager needs to make sure no team member is an island, or the project might fail. If the unmet expectation is not the only expectation of particular team member, the case is not crucial.

However, the project manager should negotiate the unmet expectation with the team member as well as the vision of its realization. In the best case, the unmet expectation is achievable during the project implementation, although it is not directly related to the project objectives. Otherwise, the project manager should suggest the ways realize the unmet expectation in the future.

Additionally, the project manager should analyses whether the unmet expectation is an unreasonable one. Unreasonable expectations are those, which are impossible or highly unlikely for any individual to meet. The project manager should understand possible reasons behind unreasonable expectations, as well as their impact on the motivation of the team member. Also, he has to keep in mind discovered expectation gap during all project period.

### 4.2 Missed Objective

The antipattern is formally described as

$$\exists v_i \,\big|\, S_{v_i} = \varnothing. \tag{3}$$

In other words, there is the project objective not corresponded to any personal expectation (for example, $v_2$ at Fig. 1) at the map.

The case is essential from project manager's point of view. The lack of personal interest in particular objective usually causes its ignoring. If it is not possible to drop the missed objective, project manager should find the way to make the objective attractive for the team members.

In this situation, we can offer two solutions.

— The best solution. The project manager negotiates with the team member the reasons for his expectations and shows that some his/her reasons are related to the achievement of the missed project objective.
— The deferred solution. The project manager explains to the team member that his/her knowledge and experience are necessary to achieve the missed project objective. At the same time, both participants are looking for a compromise solution that could potentially lead to a negative result in the future.

### 4.3 Conflicting Expectations

The antipattern should be taken into account when the cardinality of set $S_{v_i}$ is greater than one possibility, $\left|S_{v_i}\right| > 1$. In this case, the relations between personal expectations $S_{v_i}$ and project objective $v_i$ can be different: positive in the case when the objective achieving satisfy the expectations, negative in the case when failure to meet objective satisfy the expectations.

The project manager has to understand that this antipattern indicates a precondition for conflict in the team. Therefore, the right solution is the involvement of conflict management techniques. It is the very first stage of the conflict, so the probability of finding win/win solution is high.

## 5 The Process of the Expectation Map Analysis

Finally, we describe the process of the expectation map analysis (see Fig. 2).

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                    ┌─────────────┐
                    │ Expectation │
                    │  Gathering  │
                    └─────────────┘
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                    ┌─────────────┐
                    │Expectation Map│
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┌────────┐          ┌─────────────┐
│  Team  │─────────▶│    Unmet    │
│Members │          │ Expectation │
└────────┘          │   Fixing    │
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                    │Missed Objective│◀──│   Project    │
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                    │ Conflicting │
                    │Expectations │
                    │  Analyzing  │
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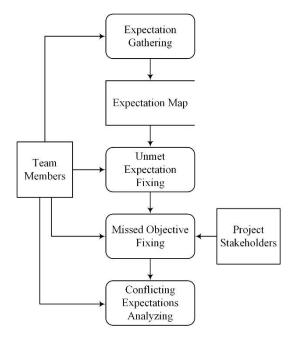
**Fig. 2.** DFD-diagram – Expectation Map Analysis

Firstly, the project manager has to find out the personal expectations of the team members and to visualize their relationship with project objectives. As mentioned above, with this purpose, the project manager should use the one-to-one meeting; the best condition is an informal atmosphere. The project manager has to pay attention to the cognitive biases, which can lead to deviation from real expectations (for example, attentional bias, bandwagon effect, choice-supportive bias, etc.). The cognitive biases can influence not only on the team members when they formulate their expectations, but also on project manager when he/she is building the expectation map.

Then the project manager should proceed to antipatterns analysis. It requires additional one-to-one meetings with some team members as well as with project stakeholders.

As a first step of the analysis, Unmet Expectations antipattern is examined. The project manager should negotiate each unmet expectation with its bearer. If the expectation is unreasonable, it is necessary to explain the situation to team member and control his behavior during project implementation period. Otherwise, the project manager should negotiate with team member his expectations and try to find a connection between them and project objectives. Sometimes it is impossible; it is not supposed to happen in the frame of the project. Such case should be negotiated carefully to avoid falling short of expectation.

After this step, the expectation map usually is modified; we should point to the particular situation. It appears when there are unmet expectations impossible for satisfaction in the frame of the project. If the corresponding team member agrees with the

case for ineligibility of expectation, the project manager can consider it as conditionally met.

As a second step of the analysis, Missed Objective antipattern is examined. It is necessary to negotiate missed objectives with stakeholders to decide whether this objective can be dropped. If it is not possible, the stakeholder should consider whether the objective could be formulated with respect to some expectations.

If the ideal or conditionally ideal (with conditionally met expectations) map was not gotten after previous steps, the project manager should return to the first step. Otherwise, he continues with Conflicting Expectation analysis.

The project manager should analyze subgroup of the team members corresponded to the set of conflicting expectations. The team members with positive "expectations – objective" correlation are possible resources appointed to work for corresponding project objective. If such solution is not realizable, then it is necessary to understand why team members have different interests. These reasons should be negotiated with team members to define the actions that are acceptable to all parties.

## 6    Case Study

Let us see an example of expectation map analysis for students' expectation management in the project on degree work development. The problem decided in the frame of the project is the analysis of the geographical distribution and evaluation of employment successfulness of universities graduates. It is an important issue not only for particular University but also for whole regions. But there has not still developed the automated tool, so that the solutions are usually time and cost ineffective because of need in the organization of primary research with survey distribution, collecting and analyzing covered a large number of people in different cities and countries. To reduce the investigation efforts, the analyzing software based on data from social networks should have been developed.

Respectively the software development project had four objectives:

— $v_1$ – to avoid the need for the primary research for gathering the source data for analysis;
— $v_2$ – to realize the automated tool for collecting and analyzing data;
— $v_3$ – to support the big data processing and renewal;
— $v_4$ – to provide the different kinds of information representation.

There were five students involved in the project implementation. At the early stage, their expectations were quite different; mined expectations are listed below:

— for student $S_1$:
  • $s_{11}$ – to get the experience of teamwork;
  • $s_{12}$ – to improve the software design and development skills;
  • $s_{13}$ – to study new technologies;
— for student $S_2$:
  • $s_{21}$ – to understand is it realistic to implement the software architecture;

- $s_{22}$ – to get the experience in multiservice application development as a team member;
- $s_{23}$ – to work with big data;

— for student $S_3$:
  - $s_{31}$ – to get expertise in the project implementation in Java from scratch to the end;
  - $s_{32}$ – to enhance the teamwork skills;
  - $s_{33}$ – to develop the communication skills;
  - $s_{34}$ – to expand the professional horizons.

— for student $S_4$:
  - $s_{41}$ – to learn how to use the API of social network fully;
  - $s_{42}$ – to discover the teamwork on joint project;
  - $s_{43}$ – to strengthen the knowledge in software architecture design;
  - $s_{44}$ – to examine some design patterns implemented them in code;
  - $s_{45}$ – to get the comments and pieces of advice from experienced mentors;

— for student $S_3$:
  - $s_{51}$ – to get the experience of teamwork on large system development;
  - $s_{52}$ – to gain the skill of development the big data analysis systems;
  - $s_{53}$ – to learn how to use the modern development frameworks;
  - $s_{54}$ – to improve the knowledge of technologies for web application development;
  - $s_{55}$ – to enhance the skills in group working with version control systems;

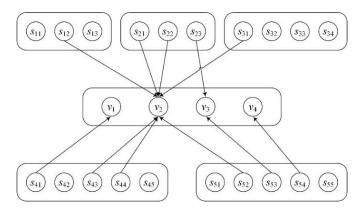The initial expectation map is shown in Fig. 3.



**Fig. 3.** Initial expectation map for students group

As we see the initial expectation map is not ideal because the condition (1) does not hold. Therefore, we should have started with unmet expectation fixing.

Nine unmet expectations could have been divided into three semantic groups – teamwork, technology and specific groups. The teamwork group is the biggest one, it contents $\{s_{11}, s_{22}, s_{32}, s_{33}, s_{42}, s_{51}, s_{55}\}$ and cannot be ignored. The development of the analytical system was too great for individual graduate work and was planned for group work. Therefore, the graduate work supervisor (as project manager) articulated it as $v_5$ – to organize teamwork on the software project. The technology group is represented

by $s_{13}$, $s_{34}$ (it was cleared up that it concerns new technologies and design patterns) and partially $s_{55}$. During the one-to-one meeting, there were negotiated the requirement to the developed system and found that the most required technologies are new for students. The specific expectation $s_{45}$ was not directly related to the project objectives, and student understood the fact. Anyway, $s_{45}$ was taken into account, and expertises from industry gave mentor session for students' team four times at the design stage of project implementation. However, during the expectation map analysis, $s_{45}$ was left as conditionally met expectation.

As result of unmet expectation fixing, we got the modified expectation map (see Fig. 4).
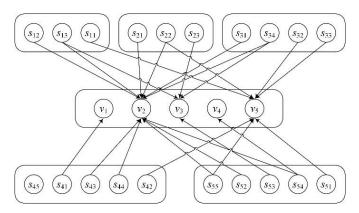


**Fig. 4.** Modified expectation map for students group

As we see, the modified map does not include the missed objective. We described above the specific of $s_{45}$, so the modified map is conditionally ideal. It is possible to prioritize the project objectives in order $v_2$, $v_5$, $v_3$, $v_1$ and $v_4$. The conflicting expectation analysis did not find the conflicting expectations in sets $S_{v_2}$, $S_{v_5}$, $S_{v_3}$. Therefore, the process of expectation map analysis was finished after the first iteration.

## 7 Conclusion

This paper introduced an empirically grounded approach to analyzing team members' expectations with the aim of coordinate them with project objectives. It focused on two types of expectations: normative and predictive expectations. It also suggested the expectations map as a model of team members' expectation. The important antipatterns for expectation map analysis were formulated and discussed. The process of expectation map analysis was finally described.

In the process of expectation map analysis, there is three complicated moments. The first moment appears during the initial one-to-one meeting when project manager eliminates expectations of team members. Sometimes team members are not able to formulate their expectations, sometimes they strive to be approved and express not relevant expectations, and sometimes project manager does not understand right team member

and fixes irrelevant expectations. The project manager has to use some checking procedures because the principle "garbage in – garbage out" works perfectly also for expectations map analysis. The second moment appears when project manager tries to fight with Unmet Expectation antipattern. He/she have to negotiate unmet expectations with corresponded team members, and it is possible to arrive at the problems presented above. The third moment appears when project manager works with stakeholders to fight with Missed Objective antipattern. The project manager has to persuade stakeholders to reconsider (in some way) the project objectives, to understand the points of view of all stakeholders and generalize them. Therefore, we should pay attention at the process subjectivity and dependence on communication skills of the project manager.

The pilot exploitation of expectation map analysis was realized for teams of software development projects and study projects. Nevertheless, there are no limitations to make use of it in other kinds of projects.

## References

1. Software Extension to the PMBOK® Guide. 5th edn. Project Management Institute, Inc. (2013).
2. Tuckman, B.: Developmental Sequences in Small Groups. Psychological Bulletin 63, 384–399 (1965).
3. Hu, J., Liden, R. C.: Antecedents of Team Potency and Team Effectiveness: An Examination of Goal and Process Clarity and Servant Leadership. Journal of Applied Psychology 96(4), 851–862 (2011).
4. Senécal, J., Loughead, T. M., Bloom, G. A.: A Season-Long Team-Building Intervention: Examining the Effect of Team Goal Setting on Cohesion. Journal of Sport and Exercise Psychology 30, 186–199 (2008).
5. Carron, A. V., Brawley, L. R., Widmeyer, W. N.: Measurement of cohesion in sport and exercise. In: Duda, J. L. (ed.) Advances in sport and exercise psychology measurement, pp. 213–226. Fitness Information Technology, Morgantown (1998).
6. Schiff, J. L.: 11 Project Management Tips for Setting and Managing Expectations, http://www.cio.com/article/2378680/project-management/11-project-management-tips-for-setting-and-managing-expectations.html, last accessed 2017/07/24.
7. Ojasalo, J.: Managing customer expectations in professional services. Managing Service Quality: An International Journal 11(3), 200–212 (2011).
8. Olkkonen, L., Luoma-aho, V.: Public relations as expectation management? Journal of Communication Management 18(3), 222–239 (2014).
9. Geurts, J. W., Willems, P. C., Lockwood, C., van Kleef, M., Kleijnen, J., Dirksen, C.: Patient expectations for management of chronic non-cancer pain: A systematic review. Health Expectations, 1–17 (2016).