Timo Poranen (ed.)

Software Project Management Summaries 2010

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Preface

This report contains summaries of project management articles published in international scientific journals and conferences. The summaries were written as a compulsory task for the Theory of Software Project Management –course held fall 2010.

The summaries were written in English or in Finnish. The summaries are not in any specific order; only English language summaries are first. All summaries have three sections: Introduction, Results and Conclusions.

We hope that these summaries help students to familiarize themselves into various aspects of (software) project management.

Timo Poranen

Tampere, December 2010

Leadership competency profiles of successful project managers

R. Müller and R. Turner, International Journal of Project Management, volume 26, issue 5, pages 437-448, 2009

Background

Understanding leadership and developing sufficient profiles for leadership is imperative in selecting successful project managers for different projects.

Müller and Turner mention many important areas regarding the development of leadership competency profiles, such as leadership theories, leadership in projects, project types and project success.

Müller and Turner rely heavily on Dulewicz' and Higgs' assessment of leadership under which leadership can be separated into three competence groups (intellectual, emotional, managerial) and 15 different competency categories (such as critical analysis, sensitivity etc.) and then three leadership profiles (engaging, involving, goal oriented).

Results

In this study the researchers adopted the concepts of the competency school for leadership, which are: leadership profiles, project success, and project types. Leadership profiles were supported by the Leadership Development Questionnaire, an assessment tool frequently used in leadership studies.

The researchers constructed two questionnaires. The first one concentrated on the respondent's last project's success and type and the second one on leadership questions. Demographic questions such as gender, age, nationality etc. were asked. Questionnaires were web-based so that respondents from all over the world could answer. Most of the respondents were from North America and Europe, though.

In analysis Müller and Turner concentrated on six areas:
1) Identifying leadership competencies which are significantly stronger
2) Identifying competencies which differ significantly in strength between different project types
3) Normalizing the measures of the fifteen dimensions
4) Categorizing the scores of the fifteen competencies into high, medium or low
5) Identifying the leadership profile of the managers of top performing projects for different project types
6) Comparing the identified leadership competency profiles with the three leadership style profiles defined by Dulewicz and Higgs

Resulting profiles were divided into groups: profiles by project application area, by complexity, by importance and by contracts. The "top" competencies varied some, but the common thread found by the researchers was that the engaging leadership profile was the most suited for different project types, except for construction and engineering projects. The engaging leadership profile has a high amount of emotional competencies (EQ) and a moderate amount of managerial competencies (MQ). Müller and Turner note that other research seems to support this finding.

Conclusions

Müller and Turner conclude that their results support the hypothesis that leadership competency profiles differ in some project types in order to be successful. The results show that high amount of one IQ competency (i.e. critical thinking) and three EQ competencies (i.e. influence, motivation, conscientiousness) are found in successful project managers in all types of projects. Other competencies surface depending on the project type. This finding is also supported by other research (Dulewicz and Higgs, 2005).

Müller and Turner recommend that leadership competencies should be taken into account when choosing project managers, i.e. choosing a project manager whose competency set fits the project type. They also note that the development of project managers should also include the development of leadership competencies. The research follows the trend which indicates that emotional competencies are more important for complex and demanding projects, whereas transactional leadership is better for simple projects.

Tuomas Hynninen

Managing cross-cultural communication in multicultural construction project teams: The case of Kenya and UK

Background

The article researches into management of multicultural construction projects. It uses the term *communication*, which is defined as "a professional practice where suitable tools and regulations can be applied in order to improve the utility of the data communicated, and is a social process of interaction between individuals" (p. 451).

Results

The researchers were talking with 20 participants from Kenya and UK. All the participants were project managers, experienced in the field of multicultural projects. They were chosen from different organisations, varying in status, size and projects managed. The interviews had a form of a semi-structured interview, with several general questions. The interviewers were able to talk to the participants and ask additional questions and gain explanations. The interviews were recorded, and further analysed using a qualitative analysis software package NUDIST NVivo™ (p. 453). From the research, 7 key aspects of multicultural project management emerged.

First of all, the difference between heavy engineering projects and other projects was discussed. In this kind of projects contractors work with clients from different economic sectors. Often new technology is introduced. This causes the projects to be especially complex, and the organisations to be innovative.

Next important aspect was communication. The article stressed that communication on every level, internal and external, is very important. The manager should be clear about what he says, he should stress project objectives. The responsibility of all the team members has to be established early. Communication should not only be equivalent to sending data, but it also should contain ensuring that the message is received and understood.

Communication is also very important in the context of quality. In order to achieve high level of quality standards, workshops or team meetings are needed, for the people to have opportunity to sit down and discuss the project. Project manager should raise the issues that rose from the project, and give everyone the opportunity to talk. Also management should keep the team members informed, consistently and equally.

Key activities in managing communication aspect, as stated in the article, are: defining responsibilities of the team members; instituting team effectiveness, collectiveness; establishing trust; encouraging honesty and respect for others; introducing cultural understanding; using value management techniques. All the participants agreed, that "project leaders need to establish clear project goals, team effectiveness and trust; and encourage respect between team members" (p. 456).

Value management in this case concentrates on the definition and continuous update

of team needs and expectations. The team is expected not only to gratify the client's needs, but to exceed them. Value management techniques can be used to maintain high level of communication. Project managers should be able to communicate and competent in the field of cross-cultural co-operation.

In another section of the article, trust within the project team is discussed. The article states that "trust provides the invisible glue which can hold a dislocated team together" (p. 457). Developing trust is a very delicate process, easily destroyed. It can be supported by good interpersonal relationships based on respect to team members and management. Trust enables the team members to be open and honest, which helps to identify and manage cultural complexity. Trust and understanding is indispensable in building the team's integrity.

The last issue of the multi-cultural projects is the creation of collectivism. The participants agreed, that individualism in team projects has counter productive effects, and collectivism works towards project's development success. It is very important to encourage team participation, and to build strong collectivity, while at the same time manager is able to understand and respond to personal issues of the team members.

Conclusions

The described article emphasises several issues concerning multicultural projects. Most important of those are: early definition of responsibilities; internal and external cross-cultural communication; trust, which supports integration; collectivism and building of cooperation; process of sharing and distributing knowledge among the team; resolving conflicts via talking and discussion. It is clear, that good communication, widely understood, and in many dimensions of the project, is the main factor in enabling good team performance. The article suggests further research into management in a multicultural environment.

Marta Gigol

Software pattern communities: Current practices and challenges

S. Henninger and V. Corrêa, in Proceedings of Pattern Languages of Programming (PLoP '07), 2007

Background

Software patterns (structured entities that address a commonly recurring problem within some context) became an important programming technique in the last couple of decades. However, the number of developed and published patterns already reached a point where it becomes increasingly difficult for a human to memorize, compare, analyze and master them. In addition, patterns are usually published in a form of unstructured or semi-structured text that requires human interpretation and cannot be effectively processed by a machine.

The objective of presented research is to overview the current state of software patterns, identify some issues that prevent them from being used more effectively in software development, and investigate the possibilities to transform loosely coupled patterns and pattern collections into a unified body of knowledge.

Results

In the empirical survey, the authors have collected more than 2200 patterns from such sources as specialized pattern portals, books, proceedings, online libraries and just by using Google search. The patterns located in a common repository (like a book or a web site) were grouped into 121 collections. About half of all patterns belong to the areas of user interface, programming languages, architecture and object-oriented design. The authors could not classify 546 patterns, since they address some specific application domain. 86% of the patterns addressed software development issues, majority of which (65%) were related to Design and Architecture stages of the software development process. 69% of patterns are accessible in the Web (in a form of HTML, PS/PDF and DOC files).

The survey revealed a few direct pattern duplicates and much more pattern variants that often use slightly different terminology. Variants add more semantic complexity and make a search process more challenging. But the most important finding was that the patterns tend to be defined in isolation: where there are some links (e.g. URLs) between related patterns, cross-collection relationships are rarely found. In addition, almost every collection used a different pattern form.

To address these issues, the authors started to investigate the potential of semantic technologies in pattern specification, particularly the Web Ontology Language (OWL). Ontologies allow formal representation of shared vocabularies of concepts, relationships and axioms, and can be used to build interconnected and distributed pattern collections.

A Description Logic mechanism (OWL-DL) can be used to build simple semantic reasoners that could help to maintain consistency of resulting pattern ontologies.

Conclusions

Although patterns represent just one particular software development approach, the challenges identified by the authors are well applicable to other areas of information technology. A great degree of freedom offered by a free-text representation allowed to accumulate vast amounts of ill-structured information, but at the same time imposed severe restrictions on coherence and machine processing (e.g. automatic categorization, relationship discovery, validation, and, most importantly, the model transformation). Extending the authors' main contention, loosely coupled and isolated collections of patterns *and other entities* (standards, methods, scientific reports, reference manuals, code repositories and so on) cannot alone provide significant improvement for software design productivity and quality.

Rise of Semantic Web, of which ontologies constitute the most significant part, could lead to development of a global knowledge base, which would embrace not only properly classified and interconnected software development patterns, but also such elements as metamodels, transformation rules and ready-to-use intelligent software modules. Together with a new generation of tools for collaborative work and uniform data representation, such thoroughly semantic-oriented approach could raise the software development process to a entirely new level.

Yuri Zaporozhets

Project management in small to medium-sized enterprises: Matching processes to the nature of the firm

R. Turner, A. Ledwith, and J. Kelly, International Journal of Project Management, volume 28, issue 8, pages 744-755, 2010

Background

Small (less than 50 employees and turnover less than €10 million) to medium (less than 250 employees and turnover less than €50 million) enterprises (SMEs) are a very large employer segment as well as they are usually prone to produce innovation in their line of work. Project management (PM) theories, on the other hand, mostly focus on large projects and their specific constraints and limitations (for example the traditional PM has focused on systems not people whereas SMEs can have a strong family-like feeling). This is why it is believed that SMEs need a "lighter" version for project management. This study consists the interviews 18 SMEs in various European countries and tries to find their project management requirements. The researches are interested to find how much PM is used in companies both in their main work as well as managing growth and innovation, does SMEs need a less bureaucratic form of project management, does the industry, size or location (country) affect the PM practises and what are the most important features of project management for SMEs.

Results

The researchers conducted a series of semi-structured interviews in smaller countries or transition economies where the impact of SMEs on the economy is more significant. The researchers asked the company representatives questions about their role on the company, the size of their company, the area of company's business, about the history of the company, the importance of innovation and growth in the company, to what extent they use project management and what practices they apply, whether they felt they needed to use a "light" version of project management and whether they perceived any differences between companies by size or by industry.

Most of the companies use project management including the fourteen of those fifteen companies that make tailored (existing product modified to the customers needs) or bespoke (new product ordered by the client) products. Some project management attempts meet passive or active resistance either from the staff or the CEO or company founder. Most of the companies use the project management also for managing innovations. The ones that do not do so usually think that innovation is not a project or that project management would not fit into it.

15 of the 18 companies said that they needed a simplified version of project management: for example, most of the firms with less than 50 employees often have only two levels of management and most employees do multiple tasks instead of specializing. This makes project management drastically different as compared to a

large company with layers of management and specialized work force. When the size of the company grow the need for project management increases. Also the attitude towards PM goes from relaxed to organized and directed during growth. Finally the length of the projects increase with the size of the company leading to a need for project management.

The study covered companies from four different industries: ICT industry, engineering and construction, services and food and pharmaceuticals. There is very little difference by industry. However, there was a noticeable difference by country starting from the demand for laissez-faire styles in Ireland and Sweden to more directed PM in Romania and Austria.

Of project management essentials most of the companies felt that the need to define client requirements as in essential first step. Only few companies used a high level schematic plan such as road map or milestones to track the progress of the project. Almost every company defined the activity lists (what needs to be done). Three of the companies used agile or scrum type methods. Most companies know what work has to be done and who will do it so responsibility assignment matrix was felt to be unnecessary bureaucracy. All the companies use some form of scope or resource schedule. Only a small number of the companies use formal team building and several of the companies have some sort of a risk management. There was no commonly used tool used for project management.

What is really interesting is the things the company representatives did not bring up. Such as: none of the interviewed companies mentioned the need for cost management. None mentioned quality management: only client requirements were felt to be important. Integration management was not mentioned maybe because it could unnecessary for micro to small companies. No project lifecycle was used.

Conclusions

Project based SMEs use project management to manage operations. PM is also used for innovation and growth projects but not as much as for the operations.

Small companies have a sense of family and they often use relaxed form of PM. When the company gets bigger the family feeling subsides and more strict PM guidelines are adopted. Also the location (country) and its local business environment affect the project management styles: Sweden, for example, seems to reach for relaxed project management as opposed to very strict and directed one of Romania.

Most of the interviewed parties agreed that they would need a "lighter" project management with less bureaucracy.

Rami Saarinen

Patterns of empowerment and leaderships style in project environment

Background

The paper discusses effects of empowerment in virtual project environments. Here, empowerment is defined as giving employees the authority to make decisions regarding their own area of expertise. Virtual project environment is an working environment in which team members are not co-located, apply technology in communication or work at differing hours. The study takes further the work conducted by Kirkman et al. in 2004 titled *The Impact of team empowerment on virtual team performance: the moderating role of face-to-face interaction*.

Results

For the purpose of this study, 117 project management professionals working at IT companies in Pakistan, Australia, Saudi Arabia, Malaysia and USA answered a questionnaire regarding empowerment climate at work environment. This questionnaire contained 33 questions regarding empowerment climate and leadership style. The effectiveness of empowered project environment was measured through customer service and leadership style.

The hypotheses of this study were (p. 641-642):

H1: Concern for task and concern for people is positively related to empowerment in projects.

H2a: The relationship between concern for task and empowerment is moderated by the level of virtuality.

H2b: The relationship between concern for people and empowerment is moderated by the level of virtuality.

H3: Customer service will be positively related to empowerment climate of projects.

Hypotheses H1 and H3 were measured through linear regression while H2a and H2b were measured through moderated regression. Results clearly showed that H1 is true, with correlation being considerable (0.35 for 'concern for task' and 0.46 for 'concern for people'). Even stronger correlation was found for H3 (0.51), that customer service is strongly related to the empowerment climate.

However, results do not show a significant moderation effect for H2a, that concern for task and empowerment would be moderated by the level of virtuality. For H2b, the results indicate that the level of virtuality has a significant moderation effect on the relationship between empowerment and concern for people.

Conclusions

From the obtained results, the authors concluded that empowerment is strongly related to task and people oriented behaviours. Focus on these aspects is seen as having a

positive effect on leading a virtual team successfully.

The authors acknowledge the imprecise nature of conducted questionnaires on people, but argue that for the subject at hand it represents a very accurate method of research. Also they point out the possible effects of varying cultures that they were unable to isolate due to limited size of sample data. However, their results seem to be supported by multitude of research.

The authors of this paper recommend project management professionals to acknowledge the potential effects of psychological empowerment and empowerment climate on virtual projects.

Olli Alatalo

Change profiles of a reused class framework vs. two of its applications

Background

Software life cycle does not end when the system is delivered. Instead it will evolve and new releases and patches are made. Software reuse can change the maintenance percentage and improve software quality. Reused component are usually more stable too than non-reusable ones. However there are also downsides when reusing software code.

Results

Results were obtained through case study of the Norwegian StatoilHydro ASA company. Investigated software was java-based framework and the company was developing a reusable framework for its own use.

Collected data was divided into four categories. These were perfective, preventive, corrective and adaptive. Perfective changes were the most common for both reused framework and applications using the framework. Total number of changes declined after initial release and were even lower that the time of the third release. Changes in the third release were mostly corrective.

Factors that affect maintenance were functionality and development practices and complexity. Results also indicate that reused framework had lower change density than the two applications reusing it. This could be because the framework changes affect existing applications.

When comparing the life cycle of the applications, reused software does indeed decay or deprecate more quickly than the applications that are using it. Reused software is more stable and needs less maintenance effort if the context of the reuse can be predicted. Proper architecture is also needed to for the reused framework.

Conclusions

Findings in the article support previous findings in other articles. These were that reusable software is more stable than non-reusable software. Reused software needs few less development phases than non-reusable software. Proper software architecture improves software re-usability and maintenance. Negative sides on reusing software are that changes in reused software affect the other applications using it.

Tommi Pirttiniemi

Managing creative projects: An empirical synthesis of activities

Background

As business world is changing from a knowledge-based economy more into a concept/design-based industry, creative projects are beginning to have a growing strategic role. However, little has been empirically done to assess what project managers in creative projects actually do when they manage their projects. In this regard, this paper aims to introduce empirical results on managing creative projects with strong emphasis on field approach and interviewees' own description of their tasks. Results are based on collected data from four case studies on creativity-focused industries.

Results

Four studies were made. First was a case study based research deriving from an exploratory ethnographic field study on video-game industry in the tradition of grounded theory and qualitative research on emergent phenomena. It appears that rather than in planning or controlling, creative project's managers' talent lies in dealing with people in and around the project. Making use of this insight, further research was made in creativity-focused industries; general advertising, multimedia software for the TV industry and a circus company. Studies were made using field observation and semi-structured interviews. Project managers were let to describe their practices in their own words.

Four "non-administrative" categories were identified. It is suggested that project managers act as a sense-maker, a web-weaver, a game-master and a flow-balancer. As a sense-maker, project manager tries to establish shared meaning and understanding, s/he interprets the situation and translates the project into goals and activities. As a web-weaver s/he act as an integrator who puts together talent, abilities and ideas, defines communication channels and helps to create knowledge-sharing context. Game-master sets the rules, animates the team, provides materials and acts as a goal-bearer. Flow-balancer sets challenges, balances constraints and freedoms and motivates team members.

Conclusions

Although the study remains exploratory and needs further empirical validation and stronger theorization, it manages to account for the various and complex roles that creative project managers are engaged to. The observations are congruent with the main trends in research on creative leadership and the emerged categories of the activities of the creative project manager propose to reconsider the conservatively assumed roles. Also the concepts of flow and fun seem to be more and more relevant for creativity in "new wave" organizations.

Johanna Huhtala

Cost estimation of a software product using COCOMO II.2000 model – a case study

Background

Estimating cost of project plays a key role in software project management. Estimating cost of embedded system projects is considered by writers. They used curve fitting approach and natural log approach to calibrate the COCOMO. They realized that curve fitting approach yield better estimates of embedded model parameters.

Results

Software companies usually try to win projects by using experience and "Price-to-win" strategies. If it is necessary, they will use Capability Maturity Model or Work Breakdown Structure to have cost estimation and parametric estimation. Factors they used for estimating embedded systems with these features: size of project is up to 4K, number of completed projects is available for studying, they have used waterfall model for their project, and the procedure of cost estimation does not have scientific approach.

And also they took different Function Points into account to make their research more applicable:
1.   Counting codes does not depend on the language of the project.
2.   They focused on customer view and tried to analyze the final output, not producer view which emphasizes on designing and modeling.
3.   Function point counts are not equally applicable to all kind of software.

In order to calculate cost estimation of a project there are three parameters which should be considered:
1.   Size estimate is the measure of the size of the final product.
2.   Effort estimate is the effort in person-month to produce the product.
3.   Schedule estimate according to company constrains and resources.

If we translate these three parameters to Cost estimate, we have:

Cost estimate=No. Of person months * Cost per person-months of effort ($)

Cost estimate contains Size, Effort and Schedule estimates, these factors contribute to make overall software development cost.

There are 8 different cost estimation methods: Algorithmic model, Expert judgment Delphi technique, Analogy, Nordan, Parkinson, Price-to-win, Top-Down, Bottom-Up and Dynamic Modeling.

The conclusion of analysis of these methods:
1.   None of them can be a good alternative for each other in all aspect
2.   Parkinson and Price-to-win don't produce satisfactory cost estimation

Because most researchers has selected algorithmic model, they used algorithmic model too. There are two types of algorithmic model:
1.   Cost Model: the main idea is about providing direct estimation of efforts. Most

of cost models are based on experience and try to retrieve those factors which contribute to overall cost such as size and code lines.

2.   Constraint Models: they try to analyze and demonstrate between two or more factors of efforts or duration or staffing level.

They used project manager's (PM) workbook and software quality analysis (SQA) workbook in order to capture data from projects. They found various metrics in PM workbook for different milestones like estimated effort, actual effort and from SQA workbook they capture different defects of systems. In order to calculate the size estimation of system they used 2 different size estimation models: System Software Sizing (SSS) and Business Application Software Sizing (BASS).

Based on the nature of project they chose the relevant model. Function points - which mentioned in the beginning – are bases of SSS/BASS. COCOMO II.2000 defines in terms of Scale factors (SF_i) and Effort multipliers (Em_i). This model is based on 3 major stages: Stage I : In high risks projects, they try to solve their problems by some methods which help them to reduce the risk such as prototypes. So in this stage cost is estimated by Object Points Technique. This method captures data from server data tables, client data tables, report reused from previous project. Stage II: using Function Points for estimating functionality. This estimate is much better than stage I. Stage III: development is started and size of project is clear. So this is the exact size of project.

There is another problem about counting codes. Sizing and counting source Lines Of Code (SLOC) is a big problem in estimating algorithms. Which language they use? How they develop their applications? How many components reuses? In order to reach a reasonable result, logic code lines were counted. Result was presented in KSLOC. The equation of COCOMO II effort estimation in person months (PM_{ns}) is:

$$PM_{ns} = A * Size^E * \prod^n_{i=1..i}$$

where A is a constant equal to 2.94, Size is software size in KSLOC, and E is defined as follows:

$$E = B + 0.01 + \sum S_i$$,where B=0.91 in COCOMO II 2000, SF: They used 5 scale drivers, scale has a range of rating levels from low to high. Each rating level has a weight. Specific value of the weight is called scale factor. EM: effort multipliers.

Conclusions

COCOMO is flexible cost estimation algorithm which is possible to fit in some levels of projects. So it is possible to find constants in this algorithm by doing some statistical tools. This case study is based on 10 projects, in order to calibrate the COCOMO, is to have more data. Constant A in COCOMO equation plays a key role.

Reza Ahliaraghi

Balancing acts: Walking the agile tightrope

R. Hoda, J. Noble, and S. Marshall, in Proceedings of the 2010 ICSE Workshop on Cooperative and Human Aspects of Software Engineering, 2010

Background

Agile software development methods are a style of development where self-organizing teams dynamically adjust to changing requirements. The paper describes Agile teams and the balancing acts they perform in order to maintain their self-organizing nature. Agile teams are self-organizing teams that manage their own work and organize around their tasks. They must have common focus, mutual trust, respect and the ability to reorganize to meet new challenges. Self-management brings decision making authority down to the level of operational problems, which increases the speed and accuracy of problem solving. Leadership in self-organizing teams is democratic and subtle.

Results

Research consists of interviews of 40 people participating in Agile projects in 16 different software organizations in New Zealand and India. In addition to that, the writers observed Agile practices in a few projects in both countries. The term *Balancing Acts* describes the efforts by self-organizing teams to balance between different and often contrasting concepts.

The first balancing act is balancing freedom and responsibility. The self-organizing Agile team has more freedom and autonomy when it comes to operational decisions, organization and task assignment. Along with the freedom comes the responsibility towards other team members and the responsibility to achieve team goals. The research found that the teams in both India and New Zealand had the freedom to set team goals and also realized their responsibility to ensure that the goals were achieved through a collaborative effort. Also in the research it was found that the lack of experience in Agile environment causes struggling to take responsibility to self-assingn tasks and not look up to their managers for guidance and decision making.

The second balancing act is the balance between cross-functionality and specialization. The research found that Agile teams try to encourage cross-functionality, that is, the ability to team members to look beyond their area of specialization. Still, they cannot totally do away with specialization as people have their own strong areas and that should be taken into account too. Cross-functionality across different functional roles, such as developers, analysts and testers was found to be considered to be one of the key characteristics of Agile teams as that enables the team members to gain a more broad understanding of the project. Also, cross-functionality across technical areas of expertise allows team members to become familiar with different technical aspects of the project. That leads to flexibility in the team as it is not dependent on any one individual member as somebody else always knows something about that member's technical area, such as database programming.

Third balancing act is between continuous learning and iteration. Agile teams recognize the need to constantly self-evaluate and learn, but the pressure to

continually deliver their iteration goals can undermine it because there may not be time for the self-evaluation and learning. That is why in order to create and maintain continuous learning environment the teams need to set aside some explicit time for learning during each iteration.

Conclusions

By literature review it was found that there are three conditions a team should met in order to it to be self-organizing: autonomy, cross-fertilization and self-transcendence. A study of these conditions revealed that there is a relationship between them and the balancing acts found as a result of the research. Each of the balancing act is performed in order to uphold one of the three conditions. Balancing freedom and responsibility upholds autonomy, balancing cross-functionality and specialization upholds cross-fertilization and balancing continuous learning and iteration upholds self-transcendence.

Joakim Hilska

The social network among engineering design teams and their creativity: A case study among teams in two product development programs

J. Kratzer, R.Th.A.J. Leenders, and J.M.L. Van Engelen,
International Journal of Project Management, volume 28,
issue 5, pages 428-436, 2010

Background

Creativity of engineering design teams in product development programs (PDPs) depend on many factors. One of them is the way the team is connected to other teams.

In the paper, researchers use three attributes of teams' network connections. The first attribute is "network range". The team's network range stands for amount of teams that the team is connected to. In the paper, connection between teams means any type of communication between teams. The second attribute is "tie strength". The tie strength describes connection's strength (frequency) of contacts between two teams. The third and the last attribute are defined as "network efficiency". This attribute shows degree of redundancy of connections in the whole network.

The article describes how these connections' properties influence teams' creativity and thus overall creativity of PDP, which is one of the most important things for successful completion of the project.

Results

Before doing any research, the researchers assume that teams with bigger network ranges are more creative because "having many contacts gives opportunity to obtain the required information at the right time" (page 430). The scientists expect that the increase of the tie strength has good impact on creativity of a team as "teams that interact frequently are more likely to share information" (page 430) but also warn that too frequent contacts can indicate that project work is divided improperly. The paper's authors are not sure and because of that explore exactly how network efficiency influences overall PDP's creativity. Low level of the efficiency suppose that there are many teams with high network range which should result in high creativity. On the other hand, maintaining many contacts can be resource-consuming resulting in fewer available resources to invent new things (page 431).

In this study two multinational PDPs are taken into account. The first one includes 27 teams from 17 countries that develop a space telescope (PDP A). The second consists of 23 teams from 5 countries that develop a ground-based telescope (PDP B). Both of them are under guidance of the ESA (European Space Agency).

To measure creativity, the authors used questionnaires. Team members were asked:
- How would you rate newness and originality of the solutions your team finds to problems? (from 1 – not new to 7 – very new)
- How would you rate the number of possible solutions your team develops to solve problems? (from 1 – not high to 7 – very high)
- How would they rate the number of possible solutions your team takes into consideration in order to solve problems? (from 1 – not high to 7 – very high)

Overall measure of creativity was done by summing up the three questions. (from 1 – very low to 21 – very high). The questionnaires were sent to all team members (including team leaders). The response rate was 67% for PDP A and 52% for PDP B (page 431).

The first part of the research was based on statistical analysis and in the second part statistical regression method was used (on seven different models). Both calculations revealed similar correlations between teams' network attributes. The research showed that:

- Network range has significant impact on creativity.
- Size of team has significantly negative impact on creativity (probably because big teams information flows inside the team rather than from/to outside).
- Tie strength does not have significant influence on creativity.

The statistical analysis also showed that:

- Network range is in negative correlation with size of group.
- Multinational teams tends to have more contacts (bigger network range).

Conclusions

Connections between teams in PDP have significant influence on overall creativity, therefore they should be taken under consideration when designing organizational structures (page 435). Nonetheless, the study had too small and too specific a dataset so the results may be different in other cases and the research should continue in other industries with a wider set of data (page 435).

Wojciech Jurczyk

The value of trust in project business

H . Smyth, M. Gustafsson, and E. Ganskau, International Journal of Project Management, volume 28, issue 2, pages 117–129, 2010

Background

The more complex project is, the greater risks and uncertainties are created. A good solution to reduce such negative effects is outsourcing, which forms relations between customer and supplier. One property of relationships is trust. Depending on its lack or presence the project can grow in income or have it reduced. Therefore knowledge of how trust is established and what are consequences of negligence is important in context of project management.

Results

The main form of trust in project is being vulnerable to the other party while looking forward to an outcome of their actions. The outcome cannot be known beforehand and this is where uncertainties lie but, on the other hand, there are positive possibilities as well.

Trust is therefore one factor in the process of judgment of the other party. It is based upon two elements: the disposition and attitude of the trustor (given by their personal history), which influence eagerness to be vulnerable, and the question of possible future regarding trustor and relationship. The latter is provided by subjective interpretation so that this process is not calculative but still cognitive giving more accurate estimation of one trustworthiness.

As trust partly results from previous experiences one could take as a start point being doubtful towards the trustee and behave defensively, nonetheless, many people are most likely looking for arguments to trust. The other intuitive position of the trustor is that trust learning is most likely to be combination of experiential ("gut feel") and psycho-motor (learning by performing repetitive actions) methods. On this assumption we can separate five stages of trust development. Stage 1 contains norms and routines that can be considered as first conditions affecting the decision to trust. Stage 2 is when the trust is given and judgment is made. After that there is a stage of interpretation based on factors from stage 1 and 2 and expectations of next stages. While relationship matures and there are more positive evidences of fulfilled trust we approach the stage of confidence. Confidence increases the level of trust and therefore creates the possibility of future repeat business (stage 5).

While trust increases so does the project value. Given the examples of supplier-customer services when the level of trust depended both on behavioral and technical competence it can be proven that when the critical events arise the project value depends on how well-handled they are. If critical event did not affect negatively the project, customer gets an opinion that supplier is competent and dependable, which reduces possible risks in future and therefore increases perceived value of the project. Similarly, if critical event is not well resolved project value decreases.

To prove connection between value of the project and relationship based on trust between customer and supplier we can refer to data from CROL[©]. Their results

showed that the group of customer who see supplier as "someone you can turn to with your needs" or someone "you can entrust with your problems" gained approximately four times more effective sales than the group of customers referring to the supplier as "one of many component suppliers".

Conclusions

Although there was not given the way to measure clear value of trust in the project it was proven that this value exists and can be significant. Trust, as a part of judgment, evolving through the all project can result in developing confidence and provide reliable source for making business decisions. It is advised to consider trust, which is often used intuitively and unconsciously, in a more aware process as a part of project management.

Rafał Sierawski

Analysis of cost and schedule performance of international development projects

K. Ahsan and I. Gunawan, International Journal of Project Management, volume 28, issue 1, pages 68-78, 2010

Background

The projects discussed in this paper are public sector development projects, also called as international development (ID) projects. They are designed for economic and social needs of developing countries and the goals of the projects are to reduce poverty and to serve sustainable social and economical development. The difference compared to industrial projects is that the results of ID projects are much less visible and measurable and there are more parties involved in the project. They commonly don't focus on profit and business which makes it difficult to assess the project outcome. The financing of ID projects is provided by loans from donors such as host country organizations and development banks.

Project management practices and knowledge vary a lot between industries, thus there are no global standards, certification nor training available for ID projects. There are also cultural differences that conflict with project tools and techniques. ID project areas can be virtually anything: IT, education, construction and engineering, telecommunications, manufactoring or service industries.

Project success is usually measured by time, cost, scope and quality. ID project performance evaluation is not as well studied as for industrial projects, but it is still as important, although the evaluation criteria are a bit different: satisfaction of the beneficiaries, conformation of goods and services produced, achievement of project objectives, completion of the project in time and within budget, receiving a high national profile and receiving a good reputation among donors.

The process of ID project is complex, much because of the many parties from many cultures such as the donor, the Ministry of Finance of the host country, the client, stakeholders, project coordination and the contractors. There are two different project lifecycles identified: one from the host country point of view and another from the donor point of view. Because ID project rarely have their goals or methods to achieve the goals well defined, the lifecycles should be brought together to create more successful completion of a project.

Results

The information for this analysis is gathered from project duration, cost and performance data from project budget, schedule and performance related tables, charts and figures in project reports.

Generally most of the studied projects take more time than expected. Compared to planned project duration average project delay is more than 30%, but actual cost of the ID project is less than planned cost and cost underrun per project is on average 15% from planned budget. Analyzing all ID projects world wide it can be seen that very few projects (13%) are completed as estimated in terms of time and budget whereas 73% are late, but experience cost underrun. This finding is exceptional compared to other projects in literature. When comparing further the cost and

schedule variance in relation to project success rate it is noticed that, the more cost underrun, the higher the project success rate and the later the project schedule, the higher the success rate.

Major reasons for project delay are related to the host country and the project procurement and contracting process. The most common reasons in this order are: lengthy procedure for contract evaluation and award, procurement delay, civil works and land acquisition delay, consultant requirement delay, natural calamities, government procedural delay, local politics and economic problems, loan approval and disbursement delay, project staff hiring delay, new scope addition and finally frequent change of project staff.

The main causes for cost underrun are established as local currency devaluation and competitive bidding of imported goods and services. Other causes are less use of contingency funds, project scope cut, project design change and local taxes and interests policy change.

Conclusions

The outcome of the study is exceptional what comes to project performance, which is cost underrun and schedule overrun. The analysis covers projects from emerging, developing and least developed countries of Asia, but the results can be applied to ID projects of other continents as well.

Eveliina Pihlajamäki

Rethinking project management: Researching the actuality of projects

S. Cicmil, T. Williams, J. Thomas, and D. Hodgson,
International Journal of Project Management, volume 24,
issue 8, pages 675 – 686, 2006

Background

The article proposes that research into effective project management (PM) must involve a closer inspection of project actuality, the "understanding of the lived experience of organizational members with work and life in their local project environments" (p. 676). An improved understanding of project actuality will positively influence traditional PM research into the frequency and use of PM practices. The authors' proposition represents a shift away from universal theoretical results toward empirical realities of immediate, localized projects.

Results

Conventional PM research methods measure a project's success by the completion of pre-determined specifications, within a fixed amount of time and under a set budget. Project actuality research moves beyond these finite parameters to judge a project's interconnected roles on individual bases within the social and hierarchical environments of project work. The authors discuss several studies, beginning with a case study that emphasized the subjectivity of team member interactions and working methods. The analysis demonstrated a coherent view of interpersonal complexities, the ambiguity of performance criteria, and the dangers of time-flux, by broadening our understanding of knowledge that project managers find useful in PM settings (p. 678).

The second actuality study revisited concepts of PM knowledge by using a data collection method known as active interviewing in which outlier response are manually confirmed for accuracy before being admitted into the data set. It analyzed the role of improvisation in PM cycles and described an effective manager as a "virtuoso social and political actor whose virtues include reflexivity, ethics value rationality, and the use of judgement, and intuition in context" (p. 679). The article's authors gained valuable insight from this study's research: learning to become a manager is as much a part of mastering the domain as it is developing well-rounded social and critical-thinking skills.

Another example of actuality research discussed by the authors explores the ways PM can be found in everyday experiences. The cause of failure in many projects is miscommunication between team members and the inability to meet expectations. The research was based on both interviews and standard PM training texts which discuss ideal scenarios for completion of pre-assigned tasks. Project actuality was addressed by comparing information retrieved from the interviews with recommended actions taken from the PM literature. The authors questioned traditional, prescribed management practices by drawing attention to their ineffectiveness in real-world scenarios.

Conclusions

The authors critically assessed current research being performed on the topic of project actuality. They found differences between theoretical and methodological research techniques and demonstrated the need for practical considerations of understanding the social aspects of PM. An alternative view of managerial competency is necessary to fully evaluate the convoluted nature of project actuality.

Chris Contolini

Introducing knowledge redundancy practice in software development: Experiences with job rotation in support work

Background

There is no software organization that denies the idea of having employee with diverse domains knowledge. Multitude in skills hones problem solving ability and provides common knowledge references. Software development needs continuous knowledge creation that depends on existing knowledge. Knowledge redundancy also facilitates collaboration, flexibility, and coordination of team and organization. But barely proper channel is arranged for individual needs for diverse knowledge in organization. Everybody is assigned responsibility and made questionable for it, thus there is no or very little time and interest devoted towards knowledge sharing and get familiar with each other task. Job rotation plays pivotal role for getting direct experiences in diverse domains and improve practical and intellectual dimensions of work and organization and also a medium to present skills and competencies to management. But there is always challenges of productivity and efficient utilization of resources. Then also there can be dissatisfaction of some employee due to extra load.

Results

The research on job rotation for knowledge redundancy was conducted in a software organization called MapIT and five principles of canonical action research (CAR) were implemented for the purpose. MapIT has heterogeneous portfolio of projects and services and also its employees are known to researchers. The data was obtained from semi structured interviews, review meetings, support work logs, and existing research at MapIT. Data were coded in qualitative data analysis tool and open coding tool was used for data analysis. The five core categories that arose from analysis were: conceptualization, contextual factors, factors pertaining facilitation of knowledge redundancy, benefits of knowledge redundancy, and barriers to the development of knowledge redundancy.

The job rotation research was conducted on a small set of developers who has to work on customer support. At begin two developers of different technology platform was assigned to customer support. The rotation cycle was of two weeks to match scrum iteration. In fifth week the first review was made and after sixth week only one developer and for one week is assigned to customer support. Again after concluding interview, the change was made by appointing a trial participant permanent for customer support. After each meeting, reviews and interview reports were sent to both management and participants. Some of the participants were against while some favored the research. After the decision of MapIT, the trial was continued again for thirteen more weeks during which interviews and presentation of evaluation process continued. A week after concluding the trial, the final interviews were conducted and comments received were included for in-depth evaluation.

The final evaluation suggested that customer support was indeed challenging for developers although is appreciated by customers. The issue like economical overhead, dissatisfaction with work, professionalism and many other were raised in job rotation. But after all these issues, there were many positive consequences were resulted. Some are like broaden knowledge domain, better cooperation in team, better understanding of organization aspects, and origin off innovative ideas. Out of nine developers five of them found job rotation and knowledge diversity acceptable whilst other four opposed it. Thus, after all it was found that there are many impacting factor determining the efficiency of job rotation. Finally the trial could not be able to accumulate enough proof to advocate for implementation of job rotation.

Conclusions

Different people and organization related to software keeps different perspective about knowledge redundancy. It's not just the people individual view but also the circumstances aid to generate those views. Software organization believing the benefit of knowledge redundancy always has challenges of method for adopting it. Job rotation can be a method for knowledge redundancy or more precisely job rotation to customer support could also be applicable if other factors are favorable. There can be situation where software organization has to compromise in some way to get the benefits. It's always up to the organization to decide if the benefit exceeds the compromise or vice versa.

Sunil Chaudhary

Software development team flexibility antecedents

Background

In any software development project, it is crucial for the successful development of software product that the software development team is flexible and responds to changes in the relevant environment concerning business and technology, quickly and effectively and adopts the proper solution for development of software so that the final product meets the quality standards set for software products and does not lag behind in any aspect whether technological or from usability perspectives.

Results

In this article, the authors have proposed a dynamic flexibility model to investigate how the two elements proposed in that model affect the capability of the software development team to be flexible. In addition, how the two flexibility elements, in turn, affect the final software product's quality.

The two elements in the model that are the drivers and the determinant of the amount of flexibility in software development team are 'anticipation capability' and 'reaction capability' and the flexibility elements that they affect in the software development team are 'response extensiveness' and 'response efficiency'.

The authors hypothesized the following:
1. Anticipation capability has positive relationship with software development team's response extensiveness.
2. Anticipation capability has positive relationship with software development team's response efficiency.
3. Response capability has a positive relationship with response extensiveness.
4. Response capability has a positive relationship with response efficiency.

Moreover, the authors assumed that the two flexibility elements will also have an effect on final product's quality which leads to following hypothesis:
5. Response extensiveness has a positive relationship with software quality.
6. Response efficiency has a positive relationship with software quality.

To prove the assumptions, a method of sample survey was used with a questionnaire distributed to the alumni list of a reputable Chinese university who were working in different sectors including It and non-It industries and were involved in software projects that span from less than an year to maximum six years.

A total of 119 teams agreed to participate in the test. A 5-point Likert scale was used for all measures with anchors ranging from 1 (strongly disagree) to 5 (strongly agree). The control variables were requirement uncertainty and technology uncertainty. Partial Least Square method (PLS) of structural equation modeling was used for data analysis because of the small sample size.

The results of the survey showed that that response capability have a positive relationship with response extensiveness and response efficiency however,

anticipation capability have positive relationship with response efficiency but does not have any significant effect on response extensiveness. Also, response extensiveness and response efficiency both have positive relationship with software product quality.

Conclusions

The research proved that the software developments team's flexibility plays a major role in the success of a quality product and the flexibility is not gained within days but it is a long term process where the dynamic capabilities of the team makes it develop the flexibility in them. In addition, there is need of further quantitative research in the field to prove the findings of this research on large scale and diverse environment because the current research is done only with limited people i.e. the graduates of one Chinese university.

Sajida Sajida

Defining 'success' for software projects: An exploratory revelation

Background

Successful software projects are relatively less in the current software world. One of the possible reasons is that the definition of 'success' for software projects is different for the different stakeholders. From the previous researches, the target time, cost and product quality are believed by most stakeholders as the main project success criteria. However, because of the various complex situations of these criteria and also lack of the related reliable evaluating model, guide framework and deciding tool, it is very difficult to decide that the project was really successful or not. The authors of the paper conduct a survey and attempt to find out the notion of success of a project as held by the related software professionals and then study it further for building a comprehensive project evaluation framework.

Results

To begin with, authors describe the various constructs used in their research. From the reviewing and analyzing of previous researches about 'project' and 'software project success', they divide the software project characteristics into two categories: the internal characteristics such as target time, cost and quality, and the external characteristics such as customer satisfaction and profitability. The authors mainly focus on the research of internal characteristics, which precisely are budget, schedule, functionality and quality. They use the term "scope" for implying the combination of functionality and quality, and split the scope only when they need to find which one of them is more important for defining the project success.

Then, the paper introduces that the population of survey are mainly the software developers, project managers and customer account managers in twelve Indian software organizations, and the selection is based on the work fields and responsibilities of the various software professionals involved in the project. The method and process of survey are that authors sent three special questions as a questionnaire to these professionals and then collected the feedback. And last, three mathematical and statistical techniques are used for the analysis of results, which are Chi-Square Test, P-values and Kendall's coefficient of concordance.

In the research, the purposes of the questions of questionnaire are these:
1. The first question is for finding the most important characteristic that defines the software project success in a situation when it is urgent to deliver the software to market.
2. The second question is encouraging these software professionals to select only one characteristic to define the project success.
3. The third question is ranking the time, cost, functionality, and quality in terms of their importance in defining the project success.

Then, after the analysis of results, they found out that.
1. The scope which means functionality and quality is the most important success

criterion. Between them, the functionality is more important than the quality.

2. Between the target time and cost, the professionals have a consensus that the target time is more important for defining the success than the cost.
3. Software professionals agree that the internal characteristics of a project are more appropriate for evaluating its success than the external ones.

At last, the authors of paper mention that there are still some limitations in their research: the sample size is relatively small; the method of survey is only the writing comments on questionnaire, not the interview; the area of survey is only in Indian. Their future research will focus on eliminating these limitations and also attempt to reveal the relationships between the internal characteristics and the external characteristics of software projects.

Conclusions

In sum, the paper provides a survey to reveal the notion of success of a software project. The main finding is that the functionality is the most important characteristic for defining the project success, and relatively the cost is the least important criterion compared with other three internal characteristics. Although there are some limitations in the survey, this research may be taken as an initial step in developing a detailed framework for the evaluation of software project success.

Zhenxing Li

HRM in project group: The effect of project duration on team development effectiveness

Background

HRM (Human Resources Management) means the development of human resource plan, acquire project team, development of project team and manage project team. Nowadays, Human Resource Management can be considered as a most important factor for the success of any projects. This article investigates the effectiveness of HRM in the project environment and explore under which circumstances HRM practices are work effectively for the success of any project. Team development strategies and its effectiveness directly influence in the project. Some of the previous studies stated that HRM has no effect on the project success but team development has highly influenced on any project. HRM is not successfully practice in project team due to these some reasons:

- Lack of authority
- Team member availability
- Heterogeneous teams
- Time of project manager assignment
- Job oriented project managers
- Lack of proper training

Research

To demonstrate the effect of the HRM in projects, two main research hypothesis are:

- The impact of team development effort on project success. (H1: There is positive correlation between the effort made towards project team development and project success).
- The interaction between project duration and team development to influence on project success. (H2: the longer project duration is team development has stronger impact on project success).

To measure the success of projects four variables were used as dependent variables in the research:

1. Schedule overrun was calculated as the actual project schedule as a percentage of the original plan.
2. Cost overrun was calculated as the actual project cost as a percentage of the original plan.
3. Project performance, quality of output was measured on a scale 1 (low) to 7 (High).
4. Customer satisfaction was measured on a scale of 1 (low) to 7 (High).

The research was carried out by collecting 99 project teams from 38 organizations on Israel. Considering these projects the measures of four variables were listed below:

- Schedule overrun: average 13 % from 0 to 50 %.

- Cost overrun: average 10% from 0 to 30%.

- Project performance: 6.0 from 3 to 7.

- Customer satisfaction: 5.8 from 2 to 7.

After manipulating the data collected from these project groups by using different tools the final result of two hypotheses came as follows:

- The result gives negative result to hypothesis H1 that means there was no any great influence of the team development practices in the four variables schedule overrun, cost overrun, project performance and customer satisfaction also. So, there was no influence of team development in the success of the project.

- The research showed that "pay and reward" and "coordination" have a positive influence on the project success. Coordination mainly helped to improve the customer satisfaction. So, second hypothesis becomes true that shows team development has effective results on project success only in the long time projects.

Conclusions

Results of the research paper show that team development strategic have only influenced on the long projects. But in my opinion the good practices of the HRM in a small project also helps to developed good software with high customer satisfaction. Team combination and the team member selection has great influence in the project duration also so, even the result showed that no influenced of HRM in short duration project, some sort of implementation of HRM is fruitful for the success of any projects.

Tek Prasad Gautam

Experiences of using extreme programming to support a legacy information system migration project

J. Koskela, M. Myllyaho, J. Kääriäinen, D. Bendas, J. Hyysalo, and A. Virta, in Proceedinngs of the 17th International Conference on Software and Systems Engineering and their Applications (ICSSEA), 2004

Background

Agile development methods have got a growing interest in the software engineering community to address the needs for faster, more flexible and efficient processes. Currently the best known agile method is extreme programming (XP) which uses an iterative and incremental process executed in relatively short cycles. Unlike traditional approaches, in the XP the management overhead related to ending and starting of iteration is minimized. The paper reports and examines the XP applied to a new domain, database-oriented legacy information system migration project.

Results

The XP methodology was applied to a project where a 20-year-old existing proprietary database system was migrated. Two previous attempts using traditional waterfall approach had failed, producing mostly design documents instead of technique for transferring the data. By applying several XP practices e.g. "planning game", "short releases", "pair programming" and "on-site customer" the project ended as a success. Not all XP practices were applicable for this project, however since the project was not aiming for a traditional software development it is understable that some were left out. The empirical data of the study supports the use of XP also in a project which is not pure development but where the main activities may be design (not product) oriented.

Conclusions

The agile development method known as extreme programming (XP) seems to be suitable also for a data focused projects which primary output can be e.g. ER diagram instead of a working piece of software.

Mikko Lammi

Critical failure factors in information system projects

Background

Computerized information systems (IS) are very common in any organization. They are used in many functions inside the organization. The idea of information system is for system to store data and deliver it to the user in an informative way. But only small portion of IS-projects are considered to be successful.

Most of the IS projects fall in the category of "Challenged" (52.7%) or "Impaired" (31.1%). The article introduces the reasons of software failing. It also tries to find solution for the failings by proposing its own framework "triple-S", which is based on Process for Organizational Meanings" (POM) by Checkland and Holwell.

Results

Lyytinen and Hirschheim define four categories why the project has failed:
1. The system design requirements are not met.
2. The time reserved for the project will be exceeded.
3. The interaction with the end-user is not sufficient.
4. The expectations of the stakeholders are not met.

In other study, Flowers proposes the critical failure factors as the following:
1. The system does not operate how it is supposed to.
2. System is user-hostile and is rejected by users.
3. Cost of developments exceeds the software value.
4. The development is stopped for some reason.

The article introduces "Triple-S" which is a framework which proposes a systemic approach for solving the IS-projects problems. "Triple-S" is based on POM, which is a model represents social processes inside organization.

In POM the information system is described as a pair of systems: a system which is served (S1) and a system which is serving (S2). "triple-S" introduces "strategic project planning and delivery" (Sp) into the process as a third system between S1 and S2. Sp works in the organizational context of S1 and the purpose of it is to deliver successful S2.

The project manager is the controller in the Sp-system. Usually project manager has to have pre-occupation in the normal project manager activities but in "triple-S" he/she has to create the big picture of the project and think about the strategy. As a help, he/she can use Sp's systematic approach to deal with the nasty problems in the project.

The article announces result of a questionnaire about project failures made in Singapore in 2000. The result shows that big part of the failure factors Sp's sphere which indicates the "triple-S" –framework would be a good tool for planning SI-projects.

Conclusions

Information systems are being considered as a confused field of study. IS includes other sciences such as psychology and sociology. This article is an attempt to make sense of the IS-projects and to propose "triple-S" –framework as a solution for the failing IS-projects. "triple-S" proposes for the idea of extending SI-projects to a triple-system framework, extending "serving" and "served" to "Sp" which insures the integration of the other systems.

Jukka Pollari

The Titanic sunk, so what? Project manager response to unexpected events

Background

Projects are often involved in creating something new with non-routine research and design tasks. This causes uncertainty which materializes as unexpected events, known or unknown risks. Project managers are often responsible for identifying and analyzing risks before they materialize, and dealing with them when they do. This article studies how project managers responded to risks and analyzes the factors that caused the response to be successful or unsuccessful from the managers point of view. The goal is to discover the organizational foundations required for successful responses to risks.

Results

Before interviewing project managers, the researchers review project management related literature. This is to understand the current practices of risk management. A project is described as an usually unique process with a well defined scope and strict time and money limitations. These factors can cause uncertainty that threat the success of the project. The common approach seems to be a systematic assessment and management method, that outlines a response in case a risk materializes. There is no way to completely remove all the risks threatening a project. In addition, the uncertainty means that the risk management done by project managers is based only on an educated guess. The unexpected events, risks, that were used in the study were described as things, that threat the positive outcome of the project. In recent research there have been findings that indicate that project managers tend to shift their attention to the parts of the project, that they consider to be critical, while concentrating less on other events.

The main part of the study was conducted with interviews. An adapted repertory grid, a tool designed for cognitive mapping, was used to study the relations between the risks and the responses used to manage them. Twenty-two experienced project managers participated the interviews. After familiarizing the participants with the interviewing process, they were asked to describe two unrelated unexpected events and their response to them. One of the responses was seen as successful by the manager, while the other one unsuccessful. The two responses where then compared with each other and described in more detail. The characteristics of the responses were documented with the help of the repertory grid tool. After gathering the data, the researchers categorized the events and the responses.

The data did not indicate, that certain type of events were responded to more successfully that other. Some of the events described were identified before they materialized, but had an unsuccessful response. This might make the outcome of a response look like it is only a matter of luck. There were, however, three major characteristics identified, that helped the managers to increase their success rate. These characteristics were a responsive and functioning structure at the organizational

level, good interpersonal relationships at the group level, and competent people on the individual level.

Successful responses had political support from the top management to act quickly and appropriately. The concept, that people involved in a situation are the most competent to decide how things should be handled, seemed to be a key to success. Unsuccessful responses often had to deal with micro-management and control from the higher management. All participants of the interview mentioned communication with the stakeholders to be important. Sharing information with the stakeholders, when responding to an unexpected event was considered an important success factor, while heavy control from top management was seen as resource consuming. On the individual level being able to trust your colleagues judgement and skills was a factor in successful responses. The managers' ability to control their feelings in stressful situations was also important.

Conclusions

No matter how well prepared, all projects will face unexpected events. The research shows that the successful response for an unexpected event is dependent on the people of the organization. Although project managers can not completely avoid risks, they can increase the success rate of overcoming them by helping in establishing a functioning organizational structure, having good interpersonal relationships and using competent people.

Ville Pylkki

Summary: Survey of data management and analysis in disaster situations

Background

Data management and analysis in disaster situations is crucial for saving lives and prevent material damage. A well planned and organized data will hasten the decision making process and enable help to be better allocated to areas where it is most needed. The challenge is how to store all the vast amounts of data that is coming from different sources and then getting it to the people who need it quickly. Also, since in disaster situations things are changing quite quickly so the correctness of data must be analyzed to prevent mistakes from false or old data to be made. Also prevention and early warning of disasters can be more efficient with quick access to the right and correct data.

Results

There is much written research published on the issue of disaster management but it is scattered in multiple different forums. So the research team needed to research multiple sources ranging from journal publications to government reports and interviews of local disaster management officials.

The challenges of data management and analysis are divided into five different categories: Information extraction, Information retrieval, Information filtering, Data mining and Decision support.

- Information extraction (IE): In disaster situations the data is coming from multiple sources and is very heterogeneous, so the challenge is to extract the useful information from reports etc. making the analysis easier and faster.

  Proposed solution: A closed IE where the user defines the pattern of the information and sends the definition with the report for the system to parse. An open IE where the user doesn't have to send the definition but the IE creates so called IE triplets from the data. Problem of open IE is that it is not as focused and that it will easily lead to huge amount of triplets complicating the queries.

- Information retrieval (IR): Getting correct and up-to-date data from the database is crucial for crisis situation. How to make sure which data is actually the best at every moment? How to get the data that is needed?

  Proposed solutions: Create disaster management ontology and use it for IR. Create topic hierarchies.

- Information filtering: Some report might have too much data from which most of it is useless and going through it will only take time. How to filter the data so that only the needed data is received? How to make sure that the needed

data doesn't get filtered?

Proposed solutions: Use (generate automatically) tags in the data so it can be filtered accordingly. Tagging can be helped by using semi-structured messages.

- Data mining: In crisis situation there will be huge amounts of data coming from different sources. How to efficiently find the data needed from the database.

  Proposed solutions: Exploratory data analysis, spatial data mining or clustering/classification.

- Decision support: When disaster strikes. Decisions need to be made quickly and wrong decisions cost lives. How to make every decision the right one?

  Proposed solutions: Decision support systems that can asses and analyze the effects of decisions before they are made. These will help to choose the least worst option when there is no good ones.

Conclusions

In disasters prevention is always the best option but unfortunately not always possible.

So when disaster strikes a need for reliable and accessible system that provides correct and right data quickly for those who need it where ever they are is nothing more than important. The challenge for creating a system that does it when the data is pouring in from everywhere is difficult but not impossible.

Kimmo Röppänen

The role of monitoring and shirking in information systems project management

Background

Today's project managers are struggling with completing projects successfully, meaning that they are on time, within budget and with a good quality. Agency theory offers a foundation for explaining the impact of project monitoring on project success. In this study the theory was applied to survey 428 information systems project managers concerning their project monitoring, shirking by systems developers, and project success. To monitor means to keep track of something systematically in order to collect information about it. Shirking means evading of work, duty or responsibility. By understanding better the role of monitoring on project success project managers can use this to make projects end more successfully.

Results

This paper tested the role of monitoring on project success by testing two hypotheses. First said that greater monitoring results in less shirking. The second stated that less shirking results in greater project success.

The research was completed by interviews and surveys. First the researchers interviewed twelve managers face-to-face or by phone. The content received was analyzed and identified for different themes and key concepts. The results were formatted to a Web-based survey. Pilot test was done on the survey by nine project managers who provided feedback of the items and the system. The survey was sent to Project Management Institute (PIM) members who again sent it to their IT-industry members. Another source of data collection was PMI's Information Systems Specific Interest Group (ISSIG) Director of Professional Development which posted the survey to the organization's official webpage. A total of 428 project managers completed the survey.

The study showed that greater project monitoring via planning and meetings resulted in less shirking, while greater monitoring via responsibilities and comparison did not (p. 14). For example project plan enables more organized monitoring, better observation and better identifying of loafing and poor focus. The analysis however failed to support the second hypotheses, which was the effect of loafing on project success. The expectation that less of the playing and socializing would enable the agent to work harder and more likely complete the project on time, within budget and with quality, was not met. Maybe a very great amount of loafing would reduce project success, but such level was not detected in this study.

Conclusions

This study showed that monitoring via planning and meetings reduced loafing when planning via responsibilities and comparison did not. It could mean that too much monitoring with task completions may fail to focus developers to the real tasks and may lead to more slacking. The results also showed that shirking via poor focus

predicts project failure when shirking via loafing does not. That means that effort on the wrong tasks may ruin the project even though the effort given is good.

These results encourage information systems project managers to better monitor by encouraging developers to focus on important tasks and that way improve their project success.

Taina Lempiäinen

From hero to hubris – Reconsidering the project management of Heathrow's Terminal 5

Background

The article is an investigation about the huge project which took place on the Heathrow's T5 building and preparing for its use. It gets inside on the management of the whole project which made a day which should be memorable to be remembered but for all the opposite things (In words of The Times newspaper).

The first day of Heathrow's T5 was a complete chaos and the article's main intention is to guess which the management mistakes were, or which facts made a mega-project like this one, to turn into a nightmare for the people on charge, in just a few hours after the inauguration.

Results

The inauguration day the new Terminal on the Heathrow's Airport; T5 began to work. Everything in the project had gone surprisingly good; the project was finished on time and the testing had been done for 6 months. Everybody was hoping a huge success in the so called: "New Gateway to London". Despite all the effort put on this event, a series of problem led to develop the chaos into the just opened new terminal.

It is necessary to say that the mega-project of the Heathrow's Terminal 5 had got a huge expectation on it. The project managers gave a lot of press on it. It was a huge project which was being developed on time and in budget, so the project managers were quite satisfied with it. But of course there were some politic interest on it, in addition to being the London World Gateway it was also a huge contact gate for the upcoming event in 2012; The World Olympic Games.

In this sense everyone expected to have a successful inauguration, but starting with some problem in the parking which started to delay the staff from getting to their places of work, followed by some other problems unleashed the chaos. Lots of travelers delayed, many bags waiting to being put inside the air-crafts and some flights canceled. Everything except a successful inauguration.

According to normal accident theory and High reliability theory and quoting the text:

"Accidents are inevitable in complex tightly coupled systems. The complexity means that unexpected interactions occur between independent failures in a system. The tight coupling means that these interactions escalate rapidly and cause a system break-down."

"High reliability theory, suggests that the effects of tight coupling and complexity can be overcome by the use of a variety of organizational design and management strategies which counter the effects. Such strategies include making safety the priority organizational objective; the decentralization of decision-making to allow for prompt and flexible responses to unforeseen events; creating a culture of reliability which enhances safety by encouraging uniform and appropriate responses by field-level operatives; continuous operations, training and simulation to help create and maintain

high reliability operations; and trial and error learning from accidents/ near accidents both within the organization and externally." (p. 155).

Conclusions

T5 became a complete chaos on the opening day, and it was due to some tiny problems which on its own wouldn't be able to cause such a big issue to the Airport managers, but in conjunction it became the worst nightmare a mega-project like this could have. Theory of accidents has got its point in the event due to all the little problems which created a big one and this happens even the High Reliability Theory concepts was being applied at the early stages of the project. This is a surprising thing about the "accident".

The fact that it was impossible to modify the deadline, it was almost a dogmatism for the project manager. Also the high level of achievement in the deadlines schedule and the work done accorded to the planned budget, made the managers become extra-confident on the success of the project.

Pablo Pérez García.

Project management deployment: The role of cultural factors

Background

The paper discusses the impact of national culture on project management (PM) deployment. The national culture is measured using four dimension of Hofstede´s national culture framework: power distance, individualism, masculinity versus femininity and uncertainty avoidance. PM deployment expresses how widely the PM discipline has been accepted and adopted in different countries. It can be measured with the PM deployment index (PMDI).

Results

The study described in the paper is an empirical research in which the Hofstede´s national culture scores and the GDP/Capita (Growth Domestic Production) of 74 countries are compared to each country´s PMDI score. The objective of this comparison is to find statistical correlations between the cultural variables and the PM deployment. The countries are studied in three sets: all countries, High-GDP countries and Low-GDP countries. The distinction between high and low GDP countries is made based on the mean GDP/Capita values of the set of all countries.

The first finding was that in the set of all countries, PM is better deployed in countries with a low power distance and low uncertainty avoidance scores. Moreover, the level of PM deployment was not found to be impacted by the masculinity versus femininity dimension nor the individuality dimension. The second finding was that a high GDP/Capita is related with higher PM deployment.

Third finding was that in High-GDP countries a low power distance and uncertainty avoidance scores are related to higher PM deployment. However, in case of Low-GDP countries the only variable that was found to have an effect on the PM deployment was a high individualism score. The power distance and uncertainty avoidance dimensions did not impact on it. In the sets of High-GDP and Low-GDP countries, the level of PM deployment was not found to be affected by the wealth of the country nor the masculinity versus femininity dimension.

Conclusions

The study shows that GDP/Capita affects the way national culture impacts on PM deployment. In Low-GDP countries the PM deployment is supported by high individualism. However, in High-GDP countries the supporting cultural factors are low power distance and low uncertainty avoidance.

Manteli Numminen

An Investigation of artificial neural networks based prediction systems in software project management

Background

In article "An Investigation of Artificial Neural Networks Based Prediction Systems in Software Project Management" authors compare two methods to estimate software effort estimation. First method applies artificial neural network and second applies linear regression. Both of these methods need data to function, and dataset used in this research was COCOMO dataset, which is public and quite well-known dataset. The dataset consists of 63 different software projects, all having different kind of characteristics, for example software size, requirements volatility and schedule for development. These characteristics were used as inputs for both methods. As for using artificial neural networks require having separate training and testing data, the dataset was split into six different pairs of training data and testing data. Also according to nature of artificial neural network input were normalized. Same kind of preprocessing of inputs were applied for linear regression method, inputs were logarithmically transformed to ensure normal distribution.

Results

The artificial neural network and linear regression were used to estimate value of the amount of man-hour for the software development. Couple of different architectures for artificial neural networks was iterated and architecture with best generalization was chosen. Training phase for artificial neural network was conducted five times to reach best network to solve problem. With linear regression six models were acquired and it was found that all inputs were not very stable for each subset, and therefore inputs with low correlation with amount of man-hour for the software development were discarded. Results indicate that both methods show strong linear relationship.

Conclusions

Research state that using artificial neural networks to estimate software project effort estimation gives better results than linear regression or existing results of applying function points analysis, SLIM and COMOMO basic methods. But authors also state that more research on this domain must be done, mainly because of two reasons. Firstly because artificial neural networks usually need quite large and homogenous dataset, and this dataset did not met those requirements. And secondly, because preprocessing of inputs may have altered results. Despite of these facts it is interesting what can be achieved with applying artificial neural networks in this kind of domain, because usually artificial neural networks are used in quite different domain.

Arttu Tamminen

Designing task visualizations to support the coordination of work in software development

Johdanto

Sosiaalisen vuorovaikutuksen, ryhmätyön ja ei-teknisten asioiden osuus ohjelmistoprojekteissa on lisääntynyt. Tästä huolimatta kehitystyökalut tukevat yleensä vain toteutuksen teknistä puolta. Tutkimuksessa selvitettiin, millaisia ongelmia muutoshallintajärjestelmien käyttöön liittyy hajautetussa tiimissä, ja voiko virheraportteja tutkimalla saada tietoa kehittäjäryhmän keskinäisestä vuorovaikutuksesta ja mahdollisista ongelmista. Menetelmänä käytettiin kehittäjien haastatteluja ja virheraporttien massasta tuotettuja visuaalisia prototyyppejä.

Tulokset

Tutkimuksen ensimmäisessä vaiheessa haastateltiin open source -projekteissa toimivia kehittäjiä ja pyrittiin kartoittamaan millaisia ongelmia muutoshallintaan ja virheraporttien käsittelemiseen liittyi. Vastausten perusteella tunnistettiin ongelmatyyppejä (sivut 43-44), jotka liittyivät ensisijaisesti tekniikkaan, ryhmätyöskentelyyn, sosiaalis-kulttuuriseen vuorovaikutukseen tai johtamiseen. Ongelmista joka neljäs oli sellainen, että sen ratkaiseminen edellytti kehittäjältä vuorovaikutusta toisen kehittäjän kanssa.

Tutkimuksen toisessa vaiheessa Firefox- ja Eclipse -projektien Bugzilla virheraporteista tuotettiin käsittelyaikoihin ja tilamuutoksiin perustuva visualisointi. Visualisointi havainnollisti virhekäsittelyn kokonaistilannetta ja sellaiset yksittäiset virheraportit voitiin tunnistaa joiden käsittelyyn näytti liittyvän erityisiä ongelmia.

Toinen Social Health Overview-visualisointi havainnollisti kehitysryhmän sosiaalista tilaa. Tämä visualisointi perustui raporttien käsittelijähistoriaan. Visualisoinnista saatiin ryhmätyöhön liittyvää tietoa. Tästä nähtiin mm. raporttien kertyminen yksittäisille kehittäjille ja tietyn kehittäjän tekemät korjaukset jotka palautuivat takaisin käsittelyyn useammin kuin muilla.

Yhteenveto

Muutoshallintajärjestelmien yksittäisiä virheraportteja tai käsittelyaikoja seuraamalla on hankala saada tietoa projektin johtamisen kannalta olennaisista asioista. Järjestelmiä on kuitenkin mahdollista kehittää visuaalisia piirteitä lisäämällä. Visualisointien avulla datasta on mahdollista nähdä hyödyllinen kokonaistilanne ja tunnistaa hankaluuksia aiheuttavat virheet. Visualisoinneista voidaan saada myös resurssoinnin kannalta oleellista tietoa kehitysryhmän keskinäisestä vuorovaikutuksesta.

Jami Lehtovirta

Human resource management in the project-oriented company: A review

Johdanto

Human Resource Management (HRM) eli henkilöstöjohtaminen on yksi tärkeimmistä strategisista toiminnoista organisaatioissa. Hyvin toteutettuna se tuo organisaatiolle kilpailuetua sekä parantaa mahdollisuuksia menestyä. Henkilöstöjohtaminen lisäksi vaikuttaa vahvasti työntekijöiden ja työnantajan välisiin suhteisiin sekä työntekijän suhtautumiseen omaan työhönsä. Koska projektikeskeiset organisaatiot poikkeavat huomattavasti tavallisesta organisaatiosta työn luonteeltaan, ne luovat erityisiä haasteita henkilöstöjohtamiselle. Vaikka henkilöstöjohtamista on aiheena tutkittu paljon, sen soveltaminen projektiluonteiseen työskentelyyn on vielä kovin puutteellista.

Tulokset

Henkilöjohtamista käsittelevästä kirjallisuudesta löytyy verrattain vähän julkaisuja koskien projektiluonteisen työskentelyn eroja tavallisen organisaation työskentelyyn. Huemann, Keegan ja Turner kuitenkin esittävät artikkelissaan oletuksen, että projektiluonteinen työskentely asettaa erityisiä vaatimuksia henkilöstöjohtamiselle. Tutkimuksessaan he pyrkivät löytämään vahvistusta esittämälleen oletukselle tutkimalla projektijohtamisesta, yleisestä johtamisesta sekä henkilöstöjohtamisesta julkaistuja artikkeleita.

Ymmärtääksemme henkilöstöjohtamisen eroavaisuutta erityyppisissä organisaatioissa, on oleellista ymmärtää, että projektiluonteiset organisaatiot itse muovaavat toimintatapojaan ja käytäntöjään projektikeskeisiksi. Jo tämä itsessään vahvistaa olettamusta, että projektiluonteiset organisaatiot eivät noudata henkilöstöjohtamiselle tyypillisiä toimintatapoja. Kyseiselle organisaatiomallille on lisäksi tyypillistä projektihenkilöstön kokoonpanon muuttuminen, mikä hankaloittaa tiettyjen henkilöstöjohtamiselle tyypillisten toimintatapojen omaksumista käytäntöön. Painetta henkilöstölle lisää myös saman työntekijän sijoittuminen useaan eri projektiin, jolloin työntekijä saattaa toimia samanaikaisesti sekä projektipäällikkönä että tiimin jäsenenä.

Kaiken kaikkiaan suurin haaste projektiluonteisen työskentelyn henkilöstöjohtamisessa on taata organisaation toimivuus sekä työntekijöiden hyvinvointi jatkuvasti muuttuvassa ympäristössä. Jotta edellä mainitut seikat toteutuisivat, Huemann, Keegan ja Turner esittävät oman projektiluonteiseen työskentelyyn soveltuvan henkilöstöjohtamisen mallinsa. Mallissa painotetaan tavallisen henkilöstöjohtamisen lisäksi henkilöstön sijoittamista heille sopiviin tehtäviin, projektin johtajien vastuuta pitää huolta työntekijöistä perehdyttämällä, kouluttamalla ja antamalla palautetta sekä projektihenkilöstön uudelleensijoittamista projektin päättymisen jälkeen.

Yhteenveto

Henkilöstöjohtamisen vaatimukset projektilähtöisessä organisaatiossa poikkeavat selvästi tavallisen organisaation henkilöstöjohtamisesta. Projektilähtöisten organisaatioiden henkilöstöjohtamiseen ei kuitenkaan vielä kiinnitetä tarpeeksi huomiota käytännön työssä eikä kirjallisuudessa. Koska henkilöstöjohtaminen on kuitenkin tärkeä osa-alue myös projektilähtöisessä työskentelyssä, sitä varten tulisi kehittää omia malleja sekä toimintatapoja. Lisäksi on tärkeää huomioida, että henkilöstöjohtaminen - tai sen puutteellisuus - vaikuttaa sekä yksilö- että organisaatiotasolla, ja sillä on suuri merkitys organisaation menestymiseen.

Anna-Mari Rasmus

The effects of optimistic and pessimistic biasing on software project status reporting

Background

Many software projects cost more than planned and are finished late in comparison with time-schedule. Because software is immaterial commodity and has complicated structure, it is not so easy to know real status of the whole software project. E.g. status reports may give totally wrong impression of project status. Reports may be either too optimistic or too pessimistic. Research finds out why project managers sometimes purposely report project status to be too good or unsatisfactory. Aim is to find answers to four questions: 1) Why do project managers report status too optimistic or pessimistic? 2) How often does report status give too optimistic or pessimistic information in low- and high-risk projects? 3) What kind of attitude level is anticipated in low- and high-risk projects? 4) How does reporting affect on high-risk projects?

Results

Previously has been investigated that project managers may sometimes carry either too optimistic or too pessimistic status reports. This research found reasons why they behave in that way. Interviewees answered five questions which were sectioned low- and high-risk projects. They were also requested to consider three main points of the project: budgetary things, time-schedule and feasibility including quality things. Interviewees estimated the three aims using traffic light reporting: green – yellow – red. In exploratory research results were reported using a two-stage probabilistic model (p. 132). Empirical data were not collected. The main reasons for giving too optimistic status report were fear of telling bad news and project manager's desire to increase his/her image in work community. Too pessimistic status reports were written out mainly because project manager wants to foresee possible delays to be revealed later. Another main reason was project manager's will to work as a savior of the whole project. Too optimistic reports were mostly given both high-risk and low-risk projects. More than eight reports of ten are overoptimistic when it is a question of high-risk projects. Traffic light reporting seems to be too pessimistic. According to the research two thirds of projects are reported in red status when less than half of projects really are in that state.

Conclusions

More too optimistic than too pessimistic status reporting was appeared. That was mainly because of fear. Executives have to improve organizations to accept also "constructive criticism" in status reports. It does not mean insecurity or unbelief on a project. Meaning is to give realistic overview of project status and avoid redundant secrecy.

Minna Vangonen

Guidelines on the aesthetic quality of UML class diagrams

Johdanto

Vuonna 1995 Booch, Rumbaugh ja Jacobson integroivat ohjelmistomallittamisen lähestysmistavasta yleisen lähestymistavan, jota kutsutaan nimellä UML (Unified Modeling Language). Tässä artikkelissa käsitellään UML-kaavioiden esteettistä laatua. UML:n luokkakaavio ovat yksi vakain ja käytetyin kaaviotyyppi UML:n historiassa.

Tulokset

UML:n luokkakaaviossa käytetään konkreettisia nimimäärittelyjä, joiden ansiosta käyttäjä pystyy tunnistamaan informaation kaavion sisältä. Käsitteet, joita luokkakaaviossa käytetään, on viisasta luoda graafisesti näyttävästi ja termien täytyy vastata täysin kaavion informaation semantiikan kanssa. Kaavion elementit on määriteltävä tarkasti, jotta vältytään turhan tai jopa virheellisen informaation julkistamiselta. Puolestaan kaavion semantiikka ja syntaksi paljastavat kokonaisuuden tarkoitusperät, eli huolimattomuuteen ei ole varaa, sillä tiedon semantiikkaa saattaa muuttua jopa pienemmistäkin virheistä.

Käyttäjätestauksilla voidaan parantaa kaavioiden ulkoasua parempaan suuntaan ja jopa käytettävyyden asteella. Esimerkiksi artikkelin tutkimuksen mukaan hyvin harva käyttää värejä luodessaan luokkakaavioita. Suuntaviivaa antavia sääntöjä noudattamalla pystyy luomaan opettavaisiakin luokkakaavioita. Esimerkiksi rakenteeseen viittaavat säännöt sekä grafiikkaan viittaavat säännöt antavat hyvän suunnan menestyksekkäälle kaavion suunnittelulle ja rakentamiselle.

Johtopäätökset

Artikkelissa esiteltiin luokkakaavion tarkoitusperiä, esteettisen laadun parantamista sekä sääntöjä luokkakaavion rakentamista varten. Itse koen luokkakaavion rakentamisen haastavaksi, mutta tarpeeksi helpoksi, jotta sen kanssa työskentely tuntuisi varmasti mukavalta ja opettavaiselta. Artikkelin mukaan UML on vuosikausia ollut niin yritysten kuin yksityishenkilöiden käytössä ja niiden vuosien aikana luokkakaaviosta on tullut se johtava kaaviotyyppi josta UML parhaiten tunnetaan.

Jari Rantanen

The moral responsibility of project selectors

H. Corvellec and N. Macheridis, International Journal of Project Management, volume 28, issue 3, pages 212-219, 2010

Johdanto

Artikkelin tarkoituksena on määritellä malli, jota voidaan käyttää projektin valinnan moraalisen vastuun viitekehyksenä. Moraalinen vastuu yhdistyy valinnoissa, sekä valintojen perusteluissa projektin johtajan päätöksenteossa. Malli yhdistää näitä kahta vastuunosa-aluetta projektinhallinnan prosesseihin kolmessa vaiheessa, jotka ovat projektin käyttöönotto, -arviointi ja päätöksenteko.

Tulokset

Projektin valinta on objektiivinen arvioinnin prosessi, jossa valintaa suoritetaan useiden projektien kesken ja valitsija kohtaa useita vaikeuksia, näin ollen valintatilanteet vaativat moraalista vastuuta valinnoista. Valinnoissa huomioidaan operationaaliset ja strategiset vaikutukset yritykseen, yhteisöön ja ympäristöön sekä arvioidaan projektitiimin tehokkuus.

Projektin käyttöönoton tasolla projektin valitsijan moraalinen vastuu valintaprosessissa perustuu avoimuudelle ja eettiselle kommunikoinnille. Eettinen kommunikointi näkyy siten, että kommunikointi on informatiivista, se on totuudenmukaista, se on relevanttia sekä täsmällistä. Projektin valitsijan velvollisuutena on tehdessään valintaa suorittaa ehdoton hylkäysprosessi ja ylläpitää kontrollia. Tarkoituksena on kerätä parhaat mahdolliset projektit valittavaksi.

Projektin arvioinnissa vastuu on virheettömyydessä. Arvioinnin etiikka on systemaattisuudessa, tehokkuudessa ja rehellisessä prosessissa. Velvollisuutena on nähdä asiat monelta kantilta kunnioittaen arvojen ja kiinnostusten monimuotoisuutta. Päätöksenteontasolla tärkeää on eheys ja yhtenäisyys, päämääränä hyvä. Eettinen oikeudenmukaisuus on aikomus oikeudenmukaisuuteen.

Yhteenveto

Monet tekijät vaikuttavat projektinvalinnan päätöksentekoon ja moraaliset käytännöt valinnoissa ovat aina tilannekohtaisia. Mallin tarkoituksena ei ole olla muodollinen etiikka vaan luoda tietoisuutta valitsijan moraalisesta vastuusta. Tarkoituksena projektinvalinnassa on löytää paras mahdollinen projekti organisaatiolle. Valitsijalla on moraalinen vastuu suunnittelusta ja hän johtaa valintaprosessia, joka yhdistää monia tasoja, on avointa toimintaa, sekä tähtää oikeellisuuteen. Valinta on monitahoinen. Projektin valitsija vastaa kolminaisuuden, organisaatio - projektitiimi - projektinvalitsija, hyvästä yhteistyöstä. Näin toimiessaan projektinvalitsijan on helppo perustella valintansa myös niille jotka valintaa epäilevät.

Anu Mastokangas

The role of project management in achieving project success

A.K. Munns and B.F. Bjeirmi, International Journal of Project Management, volume 14, issue 2, pages 81-87, 1996

Johdanto

Projektin johtaminen ja projektin onnistuminen eivät välttämättä ole suoranaisesti verrannollisia. On mahdollista saavuttaa onnistunut projekti, vaikka projektin johto olisi epäonnistunut ja toisinpäin. Projektin onnistumista mitattaessa tulisi tehdä ero onnistuneen projektin ja onnistuneen projektin johtamisen välillä. Artikkeli yrittää tarjota logiikan projektin johtamisen ja projektin erolle. Artikkeli selvittää mitkä tekijät vaikuttavat näiden onnistumiseen.

Tulokset

Onnistuakseen projektilla tulee olla realistinen ja selkeä tavoite, asiakkaan tyytyväisyys, kannattavuus, markkinarako, toteutusprosessi, mahdollisesti kolmannet osapuolet sekä projektin arvon ymmärrys. Näistä vain toteutus prosessi ja selkeä tavoite kuuluu projektin johtamisen alueeseen. Tästä voidaan päätellä, että projektin johtamisella on oma vaikutuksensa projektin onnistumiseen, mutta myös monet muut projektin johtamisen hallinnan ulkopuolella olevat asiat vaikuttavat onnistumiseen. Tämä myös selittää sen miksi projekti voi epäonnistua tai onnistua itsenäisesti riippumatta projektin johtamisesta.

Projektin johtamisen onnistumisen mittareita ovat budjetissa pysyminen, projektin aikataulun pitäminen, riittävien laatuvaatimuksien täyttyminen ja projektin tavoitteen toteutuminen. Näiden toteutuminen vaatii taitavan ja sitoutuneen projektijohdon, projektin huolellisen suunnittelun, oikeanlaisen ja riittävän tiedon jakamisen, työntekijöiden oikeanlaisen motivoinnin ja tekemällä perusteellisia korjauksia mikäli virheitä toteutuksessa havaitaan.

Johtopäätökset

Projektin johtamistekniikat ovat osallisena projektin saavutuksiin, mutta projektin johtaminen ei estä projektin onnistumista. Oikeanlainen projekti voi hyvin onnistua ilman hyvää projektin johtamista, mutta onnistunut projektin johtaminen voi tehostaa merkittävästi sen onnistumista.

Jaakko Helenius

Profiling work motivation of project workers

R. Dwivedula and C.N. Bredillet, International Journal of Project Management, volume 28, issue 2, pages 158–165, 2010

Johdanto

Motivaatiotutkija Craig C. Pinder määrittelee työmotivaation olevan yksilön sisäisten ja ulkoisten tekijöiden kokonaisuus, joka määrittää yksilön työkäyttäytymisen ja tavoitteiden asettamisen. Työmotivaatio on tärkeä organisaatioiden toiminnan tehokkuuden mittapuu. Työmotivaation ollessa optimaalinen, myös työtehtävien suoritustehokkuus on erinomainen. Tekstin tavoitteena on profiloida projekti-organisaatiossa toimivien työntekijöiden työmotivaatio rinnastaen se tutkimusvaiheessa traditionaalisesti toimivassa organisaatiossa ilmenevään työmotivaatioon. Tarkoitus on siis tuoda esille näiden organisaatioiden työmotivaatioiden eroja sekä projekti-perustaisten organisaatioiden elementit, joista työmotivaatio rakentuu.

Tulokset

Traditionaalisten- ja projekti-pohjaisten organisaatioiden eroa tutkittaessa yleisellä tasolla, eroksi huomattiin organisaation lähtökohtainen struktuuri. Projekti-luontoisten yritysten sisäinen rakenne on aina väliaikainen ja yksilöllinen sen mukaan, millaista tuotetta tai palvelua toteutetaan. Teorian näkökulmasta tarkasteltuna perinteisissä organisaatioissa taas toteutuu vahvasti työn luonteen malli, joka muodostuu osaamisen moninaisuudesta, työtehtävien tärkeydestä ja tunnistettavuudesta, valmennuksesta ja palautteesta. Edellä mainitut ominaisuudet toteutuvat myös projekti-luontoisissa organisaatioissa, mutta niiden lisäksi työmotivaatioon positiivisesti vaikuttavia tekijöitä ovat myös työtehtävien vaihtelevuus ja haasteellisuus, tavoitteiden selkeys, projektiryhmän välinen tiivis kommunikointi sekä aktiivinen palaute työtehokkuudesta. Käsitellyn kahden organisaatiomuodon erot työmotivaation suhteen todettiin olevan suhteellisen vähäiset, kun tarkasteltiin miten työntekijät kokevat työmotivaationsa. Työntekijöiden työmotivaation erojen todettiin näkyvän organisaatioiden välillä siinä, että organisaatioissa vallitsevien työmotivaation lähteet vaihtelevat.

Artikkelissa käytettiin projekti-luonteisessa työssä toimivien henkilöiden työmotivaation kartoittamiseen kyselyä, johon noin kaksi kolmasosaa vastasi hyväksyttävästi. Tutkimuksessa todettiin, että mieluinen työilmapiiri ja ammattimaiseen kehitykseen johtavat tekijät vaikuttivat projektityöskentelyn työmotivaatioon eniten. Tutkimuksen analysoinnissa esiteltiin vaikuttavina tekijöinä työntekijöiden kehittäminen, työilmapiiri, oikeudenmukaisuus, työn objektiivisuus ja turvattu työpaikka. Projektityötä tekevät henkilöt motivoituvat työssään myös siitä, että projektin rakenteet pilkotut pienemmät osuudet tuovat omistajuuden tunteen tekijälleen, silloin kun työntekijät pääsevät oleelliseksi osaksi projektin suunnittelua. Vastuun kantaminen omista työtehtävistä ja kokonaisuuksista lisää myös motivaatiota ja työpanosta tehtävien suorittamiseen. Tuloksien ohella projektityössä ilmeni olevan työntekijän kannalta motivoivampi ympäristö, työ ja mahdollisuudet, kun ajatellaan työn vaihtelevuutta, omistamisen tunnetta vastuualueista sekä vankkaa kommunikointia tiiviin projektiryhmän kesken.

Yhteenveto

Tavoitteena oli profiloida projektityöläisen työmotivaatiota verraten työmuotoa traditionaaliseen työskentelyyn. Traditionaalisen ja projekti-pohjaista työtä tekevän henkilön työmotivaation erona todettiin olevan työn lähde, eikä työmotivaation sisältämät tekijät eroa suuremmin toisistaan näissä kahdessa organisaatiomuodossa. Tutkimuksessa oli kuitenkin rajoitteita, jotka voivat vaikuttaa tuloksiin, kuten projektipäällikön johtamistyyli, projektin vaihe, kulttuurierot, tutkimusotoksen koko tai valinta ja kyselyn luotettavuus. Tutkimuksessa osoitettiin, että projektiluontoisessa työskentelyssä työmotivaation merkitykselliset tekijät ovat työntekijöiden valtuutus erilaisiin toimiin koulutuksen kautta sekä työympäristön miellyttävyys kannustavana tekijänä. Myös erilaiset haasteet, työtehtävien vaihtelevuus, turvatun työpaikan tunne, sekä virallinen ja epävirallinen kommunikointi olivat suuria tekijöitä parantamaan projektissa työskentelevän henkilön työmotivaatiota.

Panu Tunttunen

Supporting risks in software project management

Johdanto

Useimmat ohjelmistoprojektit käyttävät enemmän resursseja kuin suunniteltiin, vaativat enemmän arvioitua enemmän aikaa, tarjoavat vähemmän toiminnallisuutta ja huonompaa laatua kuin odotettiin. Asiaa on tutkittu ja tämän artikkelin tarkoituksena on kuvata lähestymistapaa tiedon ja kokemuksen kehitykseen, palauttamiseen ja uudelleen käyttöön ohjelmistoprojektin riskeistä. Tämän tietämys esitellään skenaario pohjaisten mallien avulla, jotka ovat viralliset mallit toiminnan ja teorian hallinnointiin.

Tulokset

Artikkelissa esitellään kaksi paradigmaa, jotka ovat skenaario-pohjainen projektin johtaminen (scenario based project management) ja skenaario-pohjainen riskien hallinta (scenario based risk management).

Skenaario-pohjainen projektin johtaminen koostuu eri tekniikoista, joilla johtaja voi määritellä odotettavissa olevaa käyttäytymistä projektille ja useita erilaisia skenaarioita, jotka voivat ilmetä projektin kuluessa. Tekniikat kuvasivat, kuinka skenaariot muodostuvat, integroituvat projektin malliin ja kuinka projektin käyttäytymiseen vaikuttavat eri skenaarioiden yhdistelmät.

Skenaario-pohjainen riskien hallinta perustuu riskien dokumentoitiin skenaarioiden kautta, niiden uudelleen käyttöön eri projekteissa ja skenaarioyhdistelmien simulointiin tietyn projektin sisällä.

Teorioiden testaamiseksi suoritettiin kaksi empiiristä tutkimusta. Ensimmäinen tutkimus oli havainto-analyysi riskien hallinta kehyksen käytöstä kehitettäessä ohjelmisto tietyssä ympäristössä teollisuuden alalla ja toinen toteutettiin akateemisessa ympäristössä.

Yhteenveto

Tutkimuksen tuloksena oli, että mallit ovat käyttökelpoisia, mutta tarvitsevat vielä lisätyötä ollakseen täydellisiä. Skenaario-pohjainen projektinhallinta on siis edelleen jatkuvaa työtä. Artikkelin suurin panos oli, että se esitteli kuinka riskien päätyypit ja skenaariomallit voivat edustaa uudelleen käytettävää projektin johtamisen tietämystä.

Johanna Aittoniemi

Comparison of estimation methods of cost and duration in IT projects

Johdanto

IT-projektien kustannusten ja keston arvioiminen on vaikeaa. Kyseinen ongelma on vuosikymmenten tutkimuksesta huolimatta edelleen iso haaste. Tässä artikkelissa pyritään arvioimaan erilaisten ennustemallien luotettavuutta, käyttäen apuna empiirisestä datasta kerättyä tietovaarastoa. Ongelmana ennustemallien luotettavuudessa on useiden eri muuttujien ja ominaisuuksien vaikutusten arvioiminen projektin kannalta.

Tulokset

Projektin arviointiin ja ennustamiseen liittyy tiettyjä muuttujia. Historiallinen tuottavuus kertoo työkuukausien määrän henkilöä kohden projektissa. Tuotteen koko mitataan tuotetun koodin mukaan. Ohjelmiston kompleksisuutta arvioidaan sen funktionaalisella kompleksisuudella. Projektin kesto tarkoittaa aikaa, joka projektin valmistumiseen on mennyt, kun taas projektin työmäärä mitataan työntekijöiden projektiin käyttämissä tunneissa.

Tutkimuksessa oli käytössä kaksi isoa tietovarastoa: Israelilaisten yritysten, pääasiassa ohjelmistoprojekteista koostuva tietolähde ja Israelin ulkopuolelta oleva Australialaisen International Software Benchmarking Standards Group:n hallussa oleva ohjelmistoprojektien tietokanta. Tästä datasta poistettiin aluksi poikkeavat havainnot, jotka heikentäisivät tutkimuksen tarkkuutta.

Artikkelin tutkimuksessa käytettiin pääasiallisesti kahta eri ennustusmallia: lineaarista regressiomallia ja keinotekoisiin neuroverkkoihin perustuvaan arviointia. Lineaarisella regressiomallilla pyritään arvioimaan vastemuuttujien ja selittävien muuttujien lineaarista riippuvuutta. Keinotekoisilla neuroverkoilla saadaan tietoa muodostamalla verkkojen avulla arvioita input- ja output-tiedoista.

Tutkimuksen tulokset eivät olleet yksiselitteisiä. Yleisesti havainnoitiin tuotteen kompleksisuuden ja koon korreloivan positiivisesti projektin ajallisen keston kanssa ja negatiivisesti tuottavuuden kanssa. Ylipäätään työmäärään perustuvat estimoinnit olivat vakaampia ja tarkempia kuin projektin kestoon perustuvat. Itse arviointimallien välillä oli paikoittaisia eri muuttujista ja niiden määrästä riippuvia eroja. Historiallinen tuottavuus muuttujana oli avainroolissa molempia malleja käytettäessä. Loppujen lopuksi pidettiin samana, kumpaa mallia arvioinnissa käytetään. Molempia pidettiin omalla tavalla potentiaalisena ohjelmistoprojektien keston ja työmäärän arvioinnissa ja näiden tutkimuksessa. Varsinkin neuroverkkojen katsottiin toimivan hyvänä alustana tulevaisuudessa projektien arvioinnin tutkimukselle.

Johtopäätökset

Tutkimuksesta huolimatta markkinoiden tarpeita täyttäviä arviointimalleja ei ole vielä täysin pystytty löytämään. Ohjelmistoprojekteissa on edelleen niin paljon vaikeasti ennustettavia muuttujia, jotka hankaloittavat arviointia. Tärkeintä on tunnistaa

mahdollisimman tarkasti projektin kehitykseen vaikuttavat muuttujat ja ominaisuudet tarpeeksi aikaisessa vaiheessa.

Pasi Lampinen

Project management of unexpected events

A. Söderholm, International Journal of Project Management, volume 26, issue 1, pages 80-86, 2008

Johdanto

Artikkelissaan "Project management of unexpected events", Anders Söderholm käsittelee odottamattomien, ulkoapäin tulevien tapahtumien luonnetta ja niiden vaikutuksia projekteihin sekä projektin vetäjien erilaisia reagointimalleja näihin tapahtumiin. Söderholmin mukaan suhtautuminen näihin ulkoisiin tapahtumiin on perinteisesti ollut ennakoivaa, jolloin niitä on käsitelty lähinnä tiettyinä hetkinä projektin varrella tai ennakkoon riskianalyyseissä ja täten keskitytty projektin sisäiseen johtamiseen. Nykyajan organisaatiot ovat kuitenkin hyvin projektiorientoituneita ja projektien toimintaan vaikuttaa hyvin monta erilaista sidosryhmää tai organisaatiota, joiden tavoitteet ja päämäärät voivat olla hyvinkin paljon toisistaan eriäviä. Tämä nykyinen projektien elinympäristön luonteen monimuotoisuus ja ennakoimattomuus antavat aiheen tarkastella näitä ulkoisia tapahtumia uudella asenteella.

Tulokset

Artikkelissa tutkittiin neljän, toimialaltaan ja organisaatiorakenteeltaan erilaisen yrityksen projekteja. Jokaisen yrityksen toiminnassa projektit olivat pääasiallinen toimintamuoto. Tarkoituksena oli selvittää erilaisten projekteihin kohdistuvien ulkoisten tapahtumien muotoja sekä suhtautumista näihin. Tutkittavien yritysten toimialoja olivat satamien kuormauslaitteiden toimitus, voimalaitosten toimitus, verikokeiden otto- ja analyysilaitteiden kehitys lääketieteen tarpeisiin sekä organisationaalisen muutoksen toteutus julkisen terveydenhoidon piirissä. Tutkimuksessa keskityttiin projektien suoritus- tai toteutusvaiheeseen.

Söderholmin mukaan tutkimuksessa löydettiin kolme selvää tapahtumaa, jolloin projekti on interaktiossa ympäristön kanssa niin, että projektin olosuhteet tai tavoitteet voivat muuttua. Nämä ovat siis eriäviä etukäteen suunnitelluista hetkistä projektin elinkaaressa, jolloin ympäristön kanssa vuorovaikutetaan. Uudelleenavaus ("re-opening") on Söderholmin mukaan tapahtuma, joka liittyy tiiviisti projektin sidosryhmiin. Sidosryhmien intressit voivat muuttua ajan myötä tai niiden keskinäiset suhteet kokea muutoksen. Uudelleenavauksessa projektin keskeisiä toimintoja tai vaatimuksia määritellään uudelleen (esim. budjetit, aikataulut, tehtävät). Uudelleenavaukset ovat yleisimpiä projekteissa, joissa on mukana useita sidosryhmiä tai projekti toistuvasti epäonnistuu välitavoitteissaan.

Toiseksi kategoriaksi Söderholm nimeää revisiot ("revisions"). Revisiointi oli tutkittavissa projekteissa hyvin yleistä. Siinä toimintaa joudutaan muokkaamaan jonkin ulkoisen tapahtuman tai olosuhteen muutoksen johdosta alkuperäisistä suunnitelmista, jotta projekti pysyy tavoitteissaan. Revisio on kuitenkin uudelleenavausta lievempi toimi. Ne ovat yleisiä kolmessa tapauksessa: alkuperäiset suunnitelmat on tehty pitkälle aikavälille, projekti on sidoksissa muiden projektien tai organisaatioiden työn tuloksiin tai jos projektissa on työn alla innovointia tai luovuutta vaativa aihe.

Kolmantena kategoriana on päivittäinen hienosäätö ("fine-tuning"). Projektit eivät ole nykyaikana suljettuja kokonaisuuksia, vaan tietämys, kokemukset ja ihmiset vaihtuvat ulkoisen ympäristön kanssa jatkuvasti. Tämä projektin resurssien jakaminen ja vaihto ulkoisen ympäristön kanssa olikin monessa tutkimuksen projektissa ongelmana projektijohtajille.

Söderholmin mukaan edellä mainittuihin tapahtumiin voidaan löytää neljä erilaista reagointitapaa projektinjohtajien toiminnassa. Innovatiivisessa toiminnassa reagoidaan nopeasti ja luovasti kohdattuihin muutoksiin ja ongelmiin. Ratkaisuja haetaan käytettävissä olevia resursseja uudelleen organisoimalla tai kokonaan uusia, innovatiivisia ratkaisuja löytämällä. Innovatiivista toimintaa käytetään kaikissa kolmessa eri tapahtumakategoriassa. Tiheitä tapaamisaikatauluja ja lyhyen aikavälin koordinointia käytetään usein, kun projekteissa on käynnissä jokin ongelmallinen ajanjakso, joka vaatii tiivistä tarkkailua. Tämä toimintatapa on yleinen uudelleenavauksien jälkeen ja suurten revisioiden yhteydessä. Irroitusstrategiat tulevat käyttöön, kun revisioiden yhteydessä tehdyt muutokset johonkin projektin osa-alueeseen halutaan pitää irrallaan muun projektin toiminnasta ja etenemisestä. Neuvottelutaitoja ja projektin suojaamista käytetään, kun halutaan varmistaa neuvotteluilla projektin sidosryhmien kanssa projektin saamat resurssit ja jatkuvuus tulevaisuudessakin.

Yhteenveto

Söderholmin mukaan tehty tutkimus valaisi selvästi, että nykypäivän projektit ovat tiiviissä interaktiossa ja riippuvuussuhteessa ympäristönsä kanssa. Tämä tulisikin ottaa hänen mielestään aktiivisesti huomioon organisaatioiden suunnitellessa projektien toimintamalleja tulevaisuudessa. Toisaalta tehty tutkimus antoi Söderholmin mukaan myös uusia eväitä tieteellisen tutkimuksen tekoon, jossa tulisi nähdä ennalta laadittujen teorioiden ja mallien taakse, jotta löydettäisiin uutta, mielenkiintoista tietämystä.

Timi Vienola

Managing customer relationship management projects: The case of a large French telecommunications company

Johdanto

Asiakkuussuhteenhallinta (CRM) on noussut keskeiseksi osaksi organisaatioiden kilpailustrategiaa. Sen tarkoituksena on luoda, kehittää ja parantaa henkilökohtaista ja arvokasta asiakassuhdetta tarjoamalla henkilökohtaisia ja räätälöityjä palveluita tai tuotteita asiakkaiden tarpeisiin.

Isojen asiakkuussuhteenhallintaan suunniteltujen ohjelmistojen käyttöönottoon sisältyy riskejä, koska järjestelmät eivät ole vain muutos teknologiassa vaan saattavat aiheuttaa muutoksia yrityksen organisaatiorakenteeseen, prosesseihin ja työtehtäviin. Tutkimuksen tarkoituksena on selvittää miten projektiryhmä pystyy viemään läpi CRM-järjestelmän käyttöönoton ja ottamaan huomioon siihen liittyvät kysymykset yrityksessä. Tapaustutkimuksena käsitellään laajan CRM-järjestelmän käyttöönotto isossa ranskalaisessa telekommunikaatioalan yrityksessä.

Tulokset

Tutkimus tekee havaintoja johdon toimista suunnittelun, testauksen ja läpiviennin aikana sekä tarjoaa myös suoria lainauksia johtajien ajatuksista eri vaiheissa. Tämän jälkeen tutkimus tekee selvää teknologian muutoksen laajuudesta, organisaation vaatimista muutoksista, liiketoimintaan syntyvistä muutoksista, organisaatio-rakenteeseen tulevista muutoksista ja teknologian muutoksista. Lopuksi tutkimus tekee selvää siitä mikä on projektiryhmän rooli koulutuksen antamisessa, muutoksien vaatiman tuen antamisessa ja yhteydenpidossa asiakkaaseen eri projektin eri vaiheissa.

Yhteenveto

Tutkimus teki havaintoja siitä, miten esimerkkiyrityksen projekti vietiin läpi eri vaiheissa (suunnittelu, testaus, läpivienti) ja antoi parannusehdotuksia projektin eri vaiheisiin siitä, mitä projektinjohdon olisi tehtävä tai otettava huomioon, jotta projekti onnistuisi.

Petri Ikävalko

Identifying some important success factors in adopting agile software development practices

Johdanto

Ketterillä ohjelmistomenetelmillä tarkoitetaan joukkoa menetelmiä, joilla "kevennetään" ohjelmistokehitystä. Artikkelissa tutkitaan 14 ominaisuuden vaikutusta ketterillä menetelmillä toteutetun projektin onnistumiseen.

Kyselyt kohdistettiin kaiken tyyppisiin yrityksiin, jotka käyttävät ketteriä menetelmiä ohjelmistokehityksessä.

Tulokset

Tutkimuksen kohteena oli 14 ominaisuuden vaikutus ketterillä menetelmillä toteutetun projektin onnistumiseen. Ominaisuudet jakaantuivat yksilöihin liittyviin ja organisaatioon liittyviin.

Yksilöominaisuuksia ovat:

- Kilpailu

- Henkilökohtaiset ominaisuudet

- Vuorovaikutus

- Sosiaalinen kulttuuri

- Harjoittelu ja opiskelu

Organisaatioon liittyvät ominaisuudet ovat:

- Asiakastyytyväisyys

- Asiakasyhteistyö

- Asiakkaiden sitoutuneisuus

- Päätöksen tekoon kuluva aika

- Ryhmähajautus

- Ryhmäkoko

- Yrityskulttuuri

- Suunnittelu

- Kontrollointi

Ominaisuuksia tutkittiin web-pohjaisella kyselylomakkeella, jossa oli monivalintakysymyksiä. Kyselyt kohdistettiin kaiken tyyppisiin yrityksiin, jotka käyttävät ketteriä menetelmiä ohjelmistokehityksessä.

Vastauksia tuli kaiken kaikkiaan 241, joista 174 täytti laatuvaatimukset. Vastauksien tilastollisella analysoinnilla saatiin tulokseksi, että 14 ominaisuudesta yhdeksällä oli merkitystä projektin onnistumiseen.

Merkitykselliset ominaisuudet olivat:

- Asiakastyytyväisyys

- Asiakasyhteistyö

- Asiakkaiden sitoutuneisuus

- Päätökseen tekoon kuluva aika

- Yrityskulttuuri

- Kontrollointi

- Henkilökohtaiset ominaisuudet

- Sosiaalinen kulttuuri

- Harjoittelu ja opiskelu

Yhteenveto

Valituista 14 ominaisuudesta yhdeksällä oli merkitystä projektien onnistumiseen.

Vastauksien avulla löydettiin lisäksi uusia tekijöitä, jotka auttavat projektien onnistumiseen: virheestä oppiminen, ajoitus, muut ryhmien ominaisuudet ja työvälineiden käyttö.

Tommi Kallio

ICT based service innovation – A challenge for project management

B. Bygstad and G. Lanestedt, International Journal of Project Management, volume 27, issue 3, pages 234-242, 2009

Johdanto

Palvelujen merkitys informaatio- ja kommunikaatioteknologiassa kasvaa kiihtyvällä vauhdilla. Esimerkiksi matkapuhelinmarkkinoilla eivät varsinaisesti kilpaile enää puhelimet vaan niiden tarjoama sisältö. Norjalaiset tutkijat Bygstad ja Lanestedt raportoivat artikkelissaan tutkimuksestaan, jossa he tarkastelivat palveluinnovaatioihin keskittyvien projektien erityispiirteitä ja vertasivat niitä perinteisten materialististen tuotteiden kehitysprojekteihin. Kaikki tutkimukseen osallistuneet projektit olivat norjalaisia julkisen sektorin projekteja.

Tutkimuskysymyksenä oli, voiko perinteistä projektijohtamisen ajattelua käyttää projekteissa, joissa luodaan informaatio- ja kommunikaatioteknologiaan perustuvia palveluinnovaatioita?

Palvelu on yleisesti käsitetty antimaterialistisena tuotteena. Innovaatiotutkimus rinnastaa palvelujen innovaatiot perinteisten tuoteinnovaatioiden kanssa. Empiiriset tutkimukset ovat kuitenkin todistaneet, että palveluinnovaatiot eroavat tuoteinnovaatioista erityisesti kahdella tavalla: palvelut on yleensä kehitetty läheisessä vuorovaikutuksessa asiakkaan kanssa ja enemmän oikeassa toimintaympäristössä kuin laboratorioissa.

Tutkijat asettivat kolme hypoteesia, joiden pitävyyttä he tutkimuksessaan tarkkailivat.
1. Menestyksellinen tuotos on yhteydessä projekteihin, jotka ovat valmiina ajoissa, pysyvät budjetissa ja ovat laadukkaita.
2. Menestyksellinen tuotos on yhteydessä ulkoisten ammattilaisprojektipäälliköiden käyttöön.
3. Menestyksellinen tuotos on yhteydessä projekteihin, joissa on yksityiskohtainen suunnitelma halutuista organisatorisista vaikutuksista.

Tuotoksella tarkoitetaan uutta tai kehitettyä palvelua, tai kehitettyä prosessia, jolla tuotetaan jo vakiintunutta palvelua. (s.237)

Tulokset

Kvantitatiivinen kysely toteutettiin Norjan hallituksen alaisuudessa toimivan Hoykom ohjelman avulla. Ohjelma on tärkeä osa julkisen sektorin työtä modernisoida palvelujaan erityisesti internetiä hyväksi käyttäen. Ohjelman alaisuudessa on toiminut lähes 500 projektia ympäri Norjaa. Kysely lähetettiin 352 projektipäällikölle tai muulle projektin esimiehelle, joiden projektit olivat jo päättyneet. 37% eli 130 henkilöä vastasi kyselyyn. Ne projektit, joista ei saatu vastauksia, tutkittiin muun materiaalin avulla, mutta mitään merkittävää poikkeavuutta vastanneisiin projekteihin verrattuna ei löytynyt.

Ensimmäiseen väitteeseen - menestyksellinen tuotos on yhteydessä projekteihin, jotka ovat valmiina ajoissa, pysyvät budjetissa ja ovat laadukkaita – löydettiin kyselyn perusteella vain vähän korrelaatiota. Toisin sanoen näiden kahden asian sidos toisiinsa

ei ole vahva. Tutkimuksessa havaittiin, että projektin onnistuminen ei takaa tuotoksen menestystä.

Toiseen väitteeseen - menestyksellinen tuotos on yhteydessä ulkoisten ammattilaisprojektipäälliköiden käyttöön – ei tutkimusaineiston perusteella löydetty todisteita. Menestyksellinen tuotos ei ole selitettävissä ulkopuolisen ammattilaisen käyttämisellä projektipäällikkönä. Toisaalta taas ei myöskään sillä, että projektipäällikkö löytyy organisaation sisältä.

Kolmanteen väitteeseen - menestyksellinen tuotos on yhteydessä projekteihin, joissa on yksityiskohtainen suunnitelma halutuista organisatorisista vaikutuksista – taasen löydettiin tutkimusaineistosta vahva korrelaatio. Tarkoittaako tämä siis sitä, että jos alusta alkaen tiedetään, miten tuotosta hyödynnetään organisaatiossa, projekti toteuttaa itse itseään?

Kun asiaa tarkasteltiin neljän erilaisen projektimallin avulla (klassinen rakenne, integroitu klassinen rakenne, välillinen mukautuminen ja jatkuva parantaminen eli Total Quality Management, TQM), kolmannen väitteen kuvailema tilanne kuvaa jatkuvan parantamisen mallia. Tutkimuksen perusteella voidaan siis sanoa, että jatkuvan parantamisen malli olisi paras vaihtoehto julkisen sektorin palveluinnovaatioprojekteihin.

Johtopäätökset

Tutkimuksen perusteella voidaan sanoa, että myös epäonnistuneesta projektista voi syntyä menestyksellinen tuotos. Sillä, käytetäänkö ulkopuolista projektipäällikköä, ei ole tuotoksen menestymisen kannalta merkitystä. Tuotoksen menestyksellisyyteen vaikuttaa tietoisuus sen hyödynnettävyydestä organisaation sisällä heti projektin alusta alkaen. Tutkijat ehdottavatkin, että jatkuvan parantamisen mallia (TQM) hyödynnettäisiin julkisella sektorilla palveluinnovaatioiden kehitysprojekteissa.

Kaikki tutkimukseen osallistuneet projektit olivat julkisen sektorin projekteja. Yksityisellä sektorilla tuottavuudella ja kustannuksilla on suurempi merkitys. Palvelu, joka arvioidaan julkisella sektorilla menestykselliseksi, ei välttämättä ole kannattava rahallisesti ja näin ollen sitä ei yksityisellä sektorilla pidettäisi menestyksellisenä. Uskon, että osaa tutkimuksessa mukana olleiden projektien menestyksellisistä tuotoksista ei olisi arvioitu menestykselliseksi yksityisellä sektorilla. Tutkimustulokset saattaisivat siten poiketa tämän tutkimuksen tuloksista, jos sama tutkimus tehtäisiin yksityisen sektorin puolella.

Kristiina Niskala

Using Scrum to guide the execution of software process improvement in small organizations

F.J. Pino, O. Pedreira, F. García, M.R. Luaces, and M. Piattini,
Journal of Systems and Software, volume 83, issue 10, pages
1662-1677, 2010

Johdanto

Vain harvat pienet ohjelmistoalan yritykset käyttävät ohjelmistonkehityksen malleja. Tämä johtuu pääasiassa siitä, että mallit eivät ota huomioon pienten ohjelmistoalan yritysten ominaispiirteitä. Ohjelmistonkehitys perustuu kyseisen kaltaisissa yrityksissä vahvasti projektin jäsenten ja asiakkaan väliseen kanssakäymiseen, organisaatio on usein joustava ja melko "ohut", henkilöstöä on vähän ja yrityksellä ei ole varaa palkata tarvittavia asiantuntijoita.

Tässä tutkimuksessa esitellään kevyt prosessi (Improvement framework), joka perustuu Scrum -ketterään menetelmään. Prosessia käytetään kahdessa case study:ssa, joissa tutkitaan kuinka em. prosessi soveltuu kahden pienen ohjelmistoalan yrityksen ohjelmistokehitykseen ja mahdollistaako prosessi parantamistoimien saamisen käytäntöön sekä sopiiko ko. prosessi yleensä pienille ohjelmistoalan yrityksille. Tutkimuksesta käytetään nimitystä COMPETISOFT-projekti.

Tulokset

Tutkimus kohdistui kahteen hieman eri tyyppiseen pieneen ohjelmistoalan yritykseen. Kummallakaan tutkimuksen kohteena olevalla organisaatiolla ei ole aiempaa kokemusta ohjelmistokehitysprosessin parantamisesta.

Toisella yrityksellä on viiden vuoden kokemus kansallisella tasolla. Työntekijöitä on yhteensä seitsemän, joista kuusi osallistuu suoraan ohjelmistokehitykseen. Yritys tarjoaa valmisohjelmistoja asiakkaille, mutta suurin työkuorma kohdistuu ohjelmistojen räätälöintiin. Yritys kokee suurimmaksi ongelmaksi selkeiden ja tarkasti määriteltyjen prosessien puutteen, joka estää yritystä vastaamasta asiakkaitten kasvaviin tarpeisiin.

Toinen tutkimuksen kohde on pieni akateeminen organisaatio, jolla on 13 vuoden kokemus kansallisella tasolla. Se tuottaa tutkimus- ja kehitystoiminnan palveluita muille organisaatioille. Yhteensä 15 henkilöä osallistuu suoraan ohjelmistokehitykseen. Organisaatio käytti COMPETISOFT-mallia ohjelmistokehityksen ja projektinhallinnan prosessien parantamiseen.

Tutkimuksen kannalta huomionarvoista on, että molemmat tutkimuksen kohteena olevat organisaatiot tekevät kiinteästi yhteistyötä ja voivat hankkia ohjelmistokehitystyötä kumppaniltaan.

Parantamisprosessi koostuu viidestä osasta: prosessin käynnistäminen, prosessin kartoitus, parantamistoimenpiteiden määrittely, toimenpiteiden suorittaminen ja toimenpiteiden onnistumisen seuranta. Prosessin tuotoksia ovat ehdotukset parantamistoimenpiteiksi, yleinen parantamissuunnitelma, parantamistoimenpiteiden jalkauttamissuunnitelma sekä parantamisprosessin iteraatiokierrosten yhteydessä syntynyt raportti.

Parantamisprosessin tulokset arvioitiin keskustelemalla pääasiakkaitten kanssa. Molempien organisaatioiden parantunut ohjelmistokehitysprosessi tuotti nopeasti hyötyjä projektinhallinnassa kun edettiin ketterän ohjelmistokehityksen mallin pienillä iteratiivisilla "askelilla".

Yhteenveto

Tutkimuksen perusteella Scrumiin perustuva Improvement framework –prosessi näyttäisi tuovan käytännölliset työkalut ohjelmistojen kehitystyöprosessin parantamiseen pienille ohjelmistoalan yrityksille. Ehdotettu prosessimalli tuottaa projektin johtamisen kehyksen ja auttaa parantamaan prosessia kustannustehokkaasti ja nopeasti.

Tutkijat kuitenkin muistuttavat, että tutkimus kohdistui vain kahteen yritykseen ja sitä ei voi suoraan yleistää koskemaan kaikkia pieniä ohjelmistoalan yrityksiä. Jatkossa prosessin soveltamista edelleen tutkitaan ottamalla huomioon ensimmäisessä vaiheessa havaitut asiat.

Pasi Riihiviita

Software developer perceptions about software project failure: a case study

K.R. Linberg, Journal of Systems and Software, volume 49, issues 2-3, pages 177–192, 1999

Johdanto

Ohjelmistoprojektien epäonnistuminen on varsin yleistä. Projektin epäonnistuminen määritellään usein kustannus- ja aikatauluarvioiden ylittämisenä, projektien peruuntumisena ja projektille asetettujen laatuvaatimusten täyttämättä jäämisenä. Artikkelissa selvitetään tutkimuksissa usein pienelle huomiolle jäänyttä epäonnistuneeseen projektiin osallistuneiden ohjelmistokehittäjien näkökulmaa tapaustutkimuksen avulla.

Tulokset

Tutkimus toteutettiin tapaustutkimuksena, jossa tarkasteltiin ohjelmistokehitysprojektia, jonka lopputuotteena oli lääketieteen asiantuntijoiden käyttöön tuleva työkalu. Tarkoituksena oli saada vastauksia kysymyksiin miten ohjelmistokehittäjät itse määrittelevät projektin onnistumisen, missä määrin projektin epäonnistuminen vaikuttaa ohjelmistokehittäjien työviihtyvyyteen ja mikä vaikutus ohjelmistokehittäjien temperamentilla on projektin onnistumiseen.

Tarkastellun ohjelmistoprojektin kesto oli 193% alkuperäisestä suunnitelmasta ja projektin kokonaiskustannukset olivat 410% hyväksytystä budjetista. Projektiin liittyvien ohjelmistojen koko koodiriveissä mitattuna oli 130% arvioidusta ja firmwaren koko 800% arvioidusta (s. 180).

Vaikka projekti oli perinteisillä kriteereillä arvioiden epäonnistunut, viisi kahdeksasta projektiin osallistuneesta ohjelmistokehittäjästä vastasi sen olleen onnistunein projekti, jossa he ovat työskennelleet. Kolme muuta kehittäjää vastasi sen olleen toiseksi onnistunein. Tämän katsottiin johtuvan siitä, että projekti koettiin haasteelliseksi, tuote toimi vaatimusten mukaisesti ja ryhmä oli pieni ja hyvin toimiva (s. 182).

Johtopäätökset

Tutkimus osoittaa, että ohjelmistokehittäjät määrittelevät projektin onnistumisen tai epäonnistumisen eri kriteerein kuin alalla on yleensä tapana. Ohjelmistokehittäjien työtyytyväisyys ei myöskään ole sidoksissa siihen, missä määrin projekti täyttää sille asetetut aikataulu- ja kustannusarviot. Tutkimuksessa todetaan lisäksi, että vaikka kehittäjien temperamentilla voi olla vaikutusta ryhmän sisäiseen dynamiikkaan, on epätodennäköistä, että sillä olisi vaikutusta projektin onnistumiseen. Näistä tuloksista seuraa, että uudenlaiselle teorialle tai paradigmalle ohjelmistoprojektin onnistumisesta voi olla tarvetta.

Ilkka Virolainen

A teamwork model for understanding an agile team: A case study of a Scrum project

Johdanto

Ohjelmistokehitys riippuu merkittävästi tiimin suorituskyvystä. Tiimi on joukko ihmisiä joiden osaaminen täydentää toisiansa ja joilla on yhteiset tavoitteet sekä ovat sitoutuneet yhteiseen päämäärän tavoitteluun yhteisiä sääntöjä noudattaen. Nykyaikaisten kehittämismallien mukaan tiimien pitäisi olla itseohjautuvia ja hallita itsenäisesti tekemisensä. Artikkelin kirjoittajien tavoitteena on luoda käsitys itseohjautuvista ketteristä tiimeistä ja niissä ilmenneissä haasteissa. Kirjoittajat tekivät 9 kuukauden tutkimuksen ohjelmistokehitystä tekevissä yrityksissä joissa käytössä oli ketterä menetelmä Scrum. Scrum on kehitetty ohjelmistoprojektien hallintaan ja sisältää lyhyitä kehitysvaiheita sekä toistoja joita kutsutaan sprinteiksi.

Tulokset

Itseohjautuvista tiimeistä on tullut suosittuja. Itseohjautuvuuden käyttö edistää henkilöstön tyytyväisyyttä, alentaa poissaoloa ja parantaa yrityksen liikevaihtoa. Tutkimuksissa tuli ilmi, että itseohjautuvuus on aluksi hankalampaa kuin perinteisessä johtamismallissa. Perinteisessä johtamismallissa on selkeä johtaja joka ohjaa koko tiimin toimintaa. Scrum-tiimissä Scrum-mestari vastaa projektipäällikköä, jonka tehtävänä on huolehtia siitä, että projekti pääsee etenemään ilman vaikeuksia ja jonka tehtävänä on toimia samalla rajapintana tiimin ja ulkomaailman välillä, mikä koettiin hyväksi asiaksi.

Itseohjautuvissa ryhmissä hankaluutena voi olla se, että johtajuus ja johdon tuki saattaa olla liian vähäistä. Tiimin sisäisenä ongelmana kävi ilmi, että vaikka itseohjautuvalla tiimillä olisi itsemääräämisoikeus, niin yksittäisellä tiimin jäsenellä näin ei välttämättä ole. Yksittäistä tiimin jäsenelle saatetaan antaa liian paljon tehtävää kuin perinteisessä johtamismallin käytön aikana on tapahtunut.

Tutkimuksessa selvisi, että Scrum tiimeissä oli tärkeätä jakaa tietoa ryhmän ja asiakkaan kanssa päivittäisissä lyhyissä kokouksissa jolloin voitiin tunnistaa ja reagoida mahdolliset ongelmat ajoissa. Tällaisessa tiimissä jäsenet ottivat vastuuta ja omistautuivat asialleen sekä jakoivat riskit ja mahdollisuudet yhdessä mikä lisäsi tiimin jäsenten tyytyväisyyttä. Perinteisessä johtamismallissa tiimin jäsen teki enemmän yksin ja joutui myös kohtaamaan negatiiviset asiat yksin, mikä koettiin epämiellyttäväksi. Scrum-tiimin ongelmana voi olla se, että jos yksittäinen jäsen ei koe, että hänen työtänsä arvostettaisiin, hän ei myös jaa tietoansa tiimille. Tästä voi seurata se, että yksittäinen jäsen vain haluaa tehdä oman työnsä välittämättä sprintin vaiheesta, mikä hankaloittaa tiimin työskentelyä. Ongelmaksi koettiin myös se, että Scrum-tiimeissä kokoukset olivat lyhyitä ja niissä ei ehtinyt käydä tehtyä työtä kokonaisuudessa läpi jolloin ei tullut varmuutta siitä, että tiimin muut jäsenet olivat ymmärtäneet mistä on kyse.

Yhteenveto

Ketterässä ohjelmistokehityksessä korostuu itseohjautuvuus. Tiimin jäsenet ovat yhdessä vastuussa lopputuotteesta jolloin on saatava yhteinen ymmärrys siitä mikä on tavoite, vaatimukset, suunnitelmat, riskit ja yksilöllinen vastuu. Scrum tai muut ketterät menetelmät eivät anna neuvoja siitä miten johtaminen pitäisi tapahtua eikä kaikkia menetelmiä ole helppo toteuttaa käytännössä. Scrumiin siirtyminen vaatii uudelleen asennoitumista kaikilta myös johdolta.

Pauli Lammi