

Project Alignment - Collaborative Internet Based Project Management

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Abstract: Project alignment is the process of ensuring that project key stakeholders share a common understanding of project work processes, operational procedure, objectives and plans. The paper focuses on Project Alignment methods and tool for Collaborative Project Management. The research results presented are initially based on large scale distributed engineering projects, but the results can easily be transferred to other domains. Future success in large engineering project relies on the combination of two paradigms; Fully automated and IT supported engineering process and Totally networked and efficient global operation. The functions of a participative Project Alignment Booster, currently under development in the COIN project, are described.

1. Introduction

Project Management is an application area well supported and covered by existing software, both on the market and open source solutions. However the available support is mostly for single organizations. Innovative solutions are needed to boost collaborative and internet based project management, especially for distributed organizations, currently not so well covered by existing solutions.

Previous research in e.g. EU FP6 projects ECOLEAD [2], DBE [5], and Voster [15] etc. have shown that ICT solutions are not the only enablers for successful management of projects performed in distributed organizations. Important aspects are as well the “soft” issues involved in collaboration over organizational borders, e.g. trust, social networking, communication, motivation and commitment.

IT tools supporting social networking are becoming quit frequent, especially within the younger generation. The term Web 2.0 has been introduced. Although the meaning is still quite vague, it is often used to describe the approaches of user community participation, interconnectivity and interactivity of web-delivered content creation.

Enterprise 2.0, originally introduced by Andrew P. McAfee [9], is sometimes used to describe more collaborative nature of an enterprise, consisting of both social and networked changes to the organization, as well as implementing social software as enterprise tools. The social software adaptation basically means the introduction and implementation of Web 2.0 technologies within the enterprise.

2. Objectives - Collaborative Project Management

Project management is a social effort involving not only the project manager, but all the actors involved. This social aspect will only be emphasized when contemplating Collaborative Project Management, where already the management itself is a social effort.

Collaborative Project Management can be interpreted in two ways *Management of Collaborative Projects* or *Collaborative Management of Projects*

Collaborative Management of Projects means;

- Shared project management
- Delegated management responsibility
- Self organised, trusted approach
- Non-hierarchical (and participative) management organization
- Results based assessment of progress

Management of Collaborative Projects means;

- Management of projects in networked and distributed environment:
- Distributed processes
- Participants and organisations in different locations, countries, cultures etc.
- Either central project responsibility and tracking or collaborative management

Both interpretations are of interest. This paper however is more focused on approaches and methodologies to enhance Collaborative Management of Projects.

3. Methodology - Previous work

Problems involved with the management of distributed project are well known. The problems have been widely addresses. In the context of collaborate project management, we relate the term management to the operative co-ordination of the common activities. In a dynamic environment, both the structures and the operations vary in different environments and situations. In the project ECOLEAD [2] and [3], one focus area was the Virtual Organizations Management [8]. The management of collaborative projects can be classified to belong to this focus area, as a distributed project can be considered as a subset of a virtual organization.

Management of collaborative projects and Virtual Organizations (VO) has so far mainly focused on monitoring the progress of the activity and its performance. Based on the perceived measurements, the manager is assumed to take suitable measure for coordinating the activities. Very little emphasis has been on the interactions between people and business processes. However, the collaboration is performed by people in the processes of their organizations.

Collaboration among organizations has in many cases focused on exchange of information between partners and the level of interaction has been transaction based. Further enhancement of the collaboration has resulted in system integration and solutions for interoperability between different IT systems. To support management, approaches for progress measurement have also been developed. However, the focus has been on monitoring the progress. The managers have been supposed to be able to take appropriate measures based on the progress status.

The active project management can be supported for coordinated actions over company borders, if it is supported by efficient information collection systems from the participating organizations, including monitoring of past events. In addition, intelligent decision support systems can aid for the decision making by providing proactive alarms on emerging or occurred problems. Approaches and solutions for this type of “supported active management” were developed and evaluated e.g. in the ECOLEAD project, where approaches for real-time, performance measurement based management of VOs were demonstrated [7] and [8]. The solutions give real time monitoring, alarm and decision support for the relevant stakeholders [10]. In these cases, the main challenges for VO management is found to come from the characteristics of virtual organizations and their temporary nature with distribution of operations in independent but interdependent organizations with their own aim, behaviour and culture[11] and [12].

4. Social media and project management

When a project is a social event, social capable IT tools and software could also be used to support the project work and management. In this chapter some aspects of social media are introduced, briefly explained, and their possible use for project management briefly elaborated.

McAfee [9] introduces six fundamental components of **Enterprise 2.0** technologies to describe the qualities of the paradigm, using the acronym SLATES (search, links, authoring, tags, extensions, and signals). Social networking capabilities can help organizations in capturing unstructured tacit knowledge. The main challenge remains on how to differentiate meaningful and re-usable knowledge from the other content also captured in tools such as blogs, online communities, and wikis. Some Enterprise 2.0 software includes profile pages, to integrate the functionality similar to public online communities, but within the enterprise. This enables knowledge workers to find others with the knowledge they may need.

Blogs and wikis are collaboration tools, and as such, they are mainly useful for sharing unstructured information associated with ad hoc or ongoing projects and processes, but not that good for structured informational retrieval. Business processes often rely on access to structured data, documents. This may be spread across many applications, databases, and directories. Social technologies work to address such complexities, to share and aggregate the information.

The unstructured information provided by social technologies is particularly useful in business processes that are not strictly pre-defined, but where people work together in an adaptive way to innovate solutions.

Another function that social technologies could enhance is enterprise-wide search. Employees often seek information, which is held internally in a variety of formats and locations, including databases, document management systems, and other repositories. Search-ability is an integral feature of social technologies. [13]

For more compact and lightweight projects the concept of **Agile Project Management** (APM) has been introduced. It has been developed from the needs of, and therefore especially implemented in, software development projects.

The main characteristics of Agile Project Management are that the project is conducted collaboratively, with a small co-located team. The work is accomplished through a series of sessions, e.g. tasks; and the documentation produced is minimal as the project team relies almost exclusively on informal internal communication [6].

Project Management 2.0 (PM2.0), sometimes also referred as Social Project Management, is an evolution of project management practices and software built on Web 2.0 technologies and applications. Such applications include blogs, wikis and other collaborative and social software, and share characteristics like open APIs (Application Programming Interface), service oriented design and the ability to upload data and media, the ability to collaborate, share and communicate. For larger business applications the already introduced term Enterprise 2.0 is also used to describe this style of software[16]. In Table 1, a summary of the key differences between Project Management 2.0 and traditional project management are given.

Table 1 – Comparison of project management approaches

Traditional Project Management	Project Management 2.0
Centralization of control	Decentralization of control
Top-down planning	Bottom-up planning
Authoritarian, strictly controlled environment	Collaborative environment
Implied structure, pre-defined structure and tasks	Emergent structures, tasking
Limited / restricted access to the plan	Organized / unlimited access to the plan
Local access to information, strict user restrictions	Universal access to information, very few restrictions

Limited communications within team, separate tools	Enhanced communications within team, e.g. shared project e-mails, chats
Separate projects	Holistic approach, resource pools
Often complex tools	Easy to use tools
Rigidity of tools	Flexibility of tools

Widely viewed, **virtual presence** means being present via intermediate technologies, usually radio, telephone, television, or the internet. In addition, it can denote apparent physical appearance, such as voice, face, and body language. More narrowly, the term virtual presence has been considered to denote presence on World Wide Web locations, which are identified by URLs. People who are browsing a web site have been considered to be virtually present at web locations.

The term **On-line Presence** has developed further to mean more active presence on social networks. It used to be important for businesses to be present in World Wide Web, to be found if needed. This has recently been transforming into more active form, meaning true social presence on-line.

5. Project Alignment

The overall ambition of the COIN project [4] is to develop solutions for Future Internet Enterprise Systems. The project has among other things identified requirements for development in the area of Collaborative Project Management. The requirements definition is based on the analysis of the operations in several industrial companies. According to the research future success in large scale engineering project rely on the combination of two paradigms;

- Fully automated and IT supported engineering process
- Totally networked and efficient global operation

The fully automated and IT supported engineering process means extreme and wide usage of emerging ICT technology resulting in radical breakthrough in efficiency, automated operations in design and project implementation with efficient tools and methods.

Totally networked and efficient global operation takes full advantage of the efficient usage of core competencies in networked organizations. Work is distributed between the most competent and cost-efficient project partners. Agreed and shared work processes and operational procedure support social and participative project execution.

To support the above mentioned paradigms the following topics are selected for further development; *Shared working practises – Project alignment* and *Delegated and participatory project execution – Communication through tasks*.

Project alignment is the process of ensuring that key stakeholders share a common understanding of project work processes, operational procedure, objectives and plans. The ideal situation is a totally unified project work process. Project alignment in Collaborative Project is even more important as partners are often geographically distributed. The distribution may involve acting in different working environments, culture, languages and even having different values. Alignment is not just a matter of agreement of certain project working habits, norms and styles. Often achieving a good level of alignments requires participation in learning process.

To build and increase the project alignment level there is a need to analyse and measure the working and experience level at project partners. Based on the alignment capabilities a suitable learning environment can be established. Consequently the measurement of partner's alignment status and an interactive learning environment are the two building blocks in boosting project alignment.

The functions of the Participative Project Alignment Booster, currently under development, are described below. The system components will be implemented as web-services.

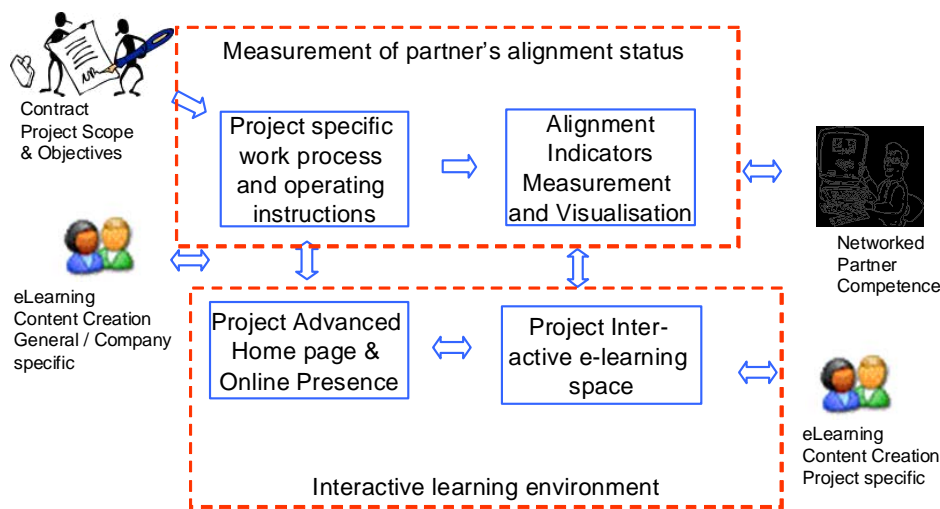


Figure 1. Proposed Participative Project Alignment Booster

5.1 Participative definition of maturity model and best practices

The definition of a maturity model is a preparatory task that has to be performed prior to the launch of any project using the Alignment Booster. A maturity model is a framework that describes, for a specific area of interest, a number of levels of sophistication at which activities are carried out. Maturity models focus on different disciplines that organizations address to improve their businesses, e.g. engineering skill and innovation potential. A maturity model defines elements that describe characteristics of effective processes. It is used mainly to help set competence improvement objectives and priorities, improve processes, and provide guidance for ensuring stable and mature engineering and innovation capabilities [14]. A IT-based innovation and engineering maturity model is a valuable tool to assess and measure competence level and to plan improvement actions.

For a distributed large scale engineering project the modelling work can start with the definition of a Networking Maturity Model. For the process areas e.g. “Organisation and People” and “Systems and technology ICT-tools” the maturity levels has to be defined. For example regarding CAD engineering tools the maturity model levels can be e.g.; 1=basic course, 2=novice user, 3=used in projects, 4=expert, 5=instructor. Likewise maturity levels are needed for all other process areas. A participative approach to define the model is preferred using “Web 2.0” principles, resulting in higher partner commitment.

5.2 Project specific work process and operating instructions

When a collaborative engineering project is initialised, the project manager analyses the required competencies in the project, geographical location and distribution. Based on customer requirements and project scope he/she defines the project work processes, tool requirements and applied technologies.

The project manager uses the Alignment Booster and defines for the project the specific needed skills, competence maturity levels and resources. He/she analyses the project partners (project team) and if some of the alignment status information is out of date or missing, he/she request the partner to use the Alignment Booster to define available current skill levels etc.

As a part of project on-going quality assurance the Alignment Booster can also be used to collect maturity status level information on a regular base and to visualize the development of the project alignment status over time.

5.3 Identification of alignment training needs

To build and increase the project alignment level there is a need to analyse and measure the working experience and collaboration status at project partners as a whole. The project manager can use the Alignment Booster and performs a gap-analysis to identify missing competencies and risks associated with not matching required and available skills and resources. A request for competence development can be raised. Also the project partner and project team members can use the system to determine development and alignment training needs for their own organisation.

5.4 Project interactive e-learning space

The interactive e-learning space is organized into layers, e.g. motivation, general project independent and project specific. The project specific layer will be structured based on project scope. It contains e-learning material and lectures on projects specific issues, technology, communication and IT-solution selected to be used in the project. The e-learning space will be partly open for contributors coming from the project community, e.g. a wiki type solution. If the competence development notices that the e-learning portal needs to be enlarged, then a request for a new training content will be sent to the appropriate experts.

The approach in developing support to project management is to include “Web 2.0” approaches into Collaborative Project Management. This includes e.g. to

- Build on project partners distributed contribution to learning
- Collect rich user experience and shared intelligence
- Ability for project partners and people to create and interact with content rather than just consume information.

6. Conclusion and next steps

The paper has reported progress in the area of collaborative internet based project management. The paper has described the usage *Social media in project management*.

Studies have come to the conclusion that future success for large scale engineering projects build on the combination of two paradigms; Fully automated and IT supported engineering process and Totally networked and efficient global operation. IT-tools are currently under development for Shared working practises – Project alignment.

The purpose of the Project Alignment Booster tool is to help partners in a distributed and collaborative engineering environment to share a common working process. The unified work process will be defined and set up in a participative fashion. Through the Alignment Booster all partners will have a better and aligned understanding on; How to reach project objectives, How to conduct and perform engineering work, How to use engineering software and How to get, consume and create training material.

The developed software services will be evaluated in a real world cases.

The next step will be to develop IT-support for the paradigm of Totally networked and efficient global operation through a delegated and participatory project execution – Communication through tasks.

Acknowledgement

The paper is mainly based on work performed in the project COIN (EU FP7 Project 216256; www.coin-ip.eu) funded by the European Community within the IST-Programme of the 7th Framework Research Programme. The authors also thank the contribution from other partners in the COIN consortium.

References

- [1] DBE EU IST FP6 IP Project DBE, Digital Ecosystems <http://www.digital-ecosystems.org/> Accessed 14.4.2009
- [2] Camarinha-Matos L.M., Afsarmanesh H., Ollus M. (eds.) 2008. Methods and Tools for Collaborative Networked Organizations. ISBN 978-0-387-79423-5. Springer, New York.
- [3] Camarinha-Matos L.M., Afsarmanesh H (eds.) 2008. Collaborative Networks: Reference Modeling. ISBN-13: 978-0-387-79425-9. Springer, New York.
- [4] COIN. IST FP7 IP Project 216256 COIN, Collaboration and Interoperability for Networked Enterprises. <http://www.coin-ip.eu/>. Accessed 14.4.2009
- [5] ECOLEAD. IST FP6 IP Project 506958 ECOLEAD European Collaborative Organizations Leadership Initiative. <http://virtual.vtt.fi/virtual/ecolead/>. Accessed 14.4.2009
- [6] Haas, K. P. 2007. The Blending of Traditional and Agile Project Management. PM World Today. May 2007. Vol. IX, Issue V. <http://www.pmforum.org/library/tips/2007/PDFs/Haas-5-07.PDF>
- [7] Jansson K, Karvonen I, Ollus M, Paganelli P Stewens R, Negretto U (2005). Real Time Virtual Organisations Management. In: Innovation and the Knowledge Economy - Issues, Applications, Case Studies. (Cunningham P, Cunningham M (Ed)). ISBN 1-58603-563-0. IOS Press. Amsterdam.
- [8] Jansson K., Karvonen I., Ollus M., Negretto U. 2008. Governance and management of virtual organizations. In: Camarinha-Matos L.M., Afsarmanesh H., Ollus M. (eds.). Methods and Tools for Collaborative Networked Organizations, Springer, ISBN 978-0-387-79423-5.
- [9] McAfee A. P. 2006. Enterprise 2.0: The Dawn of Emergent Collaboration. MIT Sloan Management Review. Cambridge: Spring 2006. Vol. 47, Issue 3; p. 21
- [10] Negretto U, Hodík J, Král L, Mulder W, Ollus M, Pondrelli L, Westphal I. (2008). VO-Management Solutions; VO Management e-Services. In: Camarinha-Matos L.M., Afsarmanesh H., Ollus M. (eds.). Methods and Tools for Collaborative Networked Organizations, Springer, ISBN 978-0-387-79423-5.
- [11] Ollus M, Jansson K, Karvonen I. (2006). On the Management of Collaborative Networked Organizations. In Conference Proceedings from IST-Africa 2006. (Cunningham P, Cunningham M (Eds)). IIMC International Information Management Corporation.
- [12] Ollus M, Jansson K, Karvonen I. (2007). On the management of collaborative SME networks. In the proceedings of COA'07 – 8th IFAC Symposium on Cost-Oriented Automation, Habana, Cuba.
- [13] Stenmark, D. (2005). "How intranets differ from the web: organisational culture's effect on technology". Proceedings of ECIS2005, Regensburg, Germany, 26-28 May 2005
- [14] Vergara M, Alonso J, Orue-Echevarria L, Karvonen I, Woelfel W, Withalm J, COIN Deliverable D6.3a – Maturity Model for SME collaboration
- [15] VOSTER European project IST-2001-32031 Virtual Organisations Cluster. <http://www.ve-forum.org/>. Accessed 14.4.2009
- [16] Filev, A., 2008. Bridging the Three Gaps in Project Management. Writing on Project Management 2.0 blog at Wrike, 25 March, 2008. <http://www.wrike.com/projectmanagement/03/25/2008/Bridging-the-Three-Gaps-in-Project-Management>