
This is an electronic reprint of the original article.
This reprint may differ from the original in pagination and typographic detail.

Kokkonen, Anne; Lehtinen, Teemu; Lavikka, Rita

Improving alliance projects through facilitation

Published in:

Proceedings of the CIB World Building Congress 2016: Volume II - Environmental Opportunities and Challenges. Constructing Commitment and Acknowledging Human Experiences

Published: 30/05/2016

Document Version

Peer reviewed version

Please cite the original version:

Kokkonen, A., Lehtinen, T., & Lavikka, R. (2016). Improving alliance projects through facilitation. In M. Prins, H. Wamelink, B. Giddings, K. Ku, & M. Feenstra (Eds.), Proceedings of the CIB World Building Congress 2016: Volume II - Environmental Opportunities and Challenges. Constructing Commitment and Acknowledging Human Experiences (Vol. 18, pp. 498-509). Tampere, Finland.

This material is protected by copyright and other intellectual property rights, and duplication or sale of all or part of any of the repository collections is not permitted, except that material may be duplicated by you for your research use or educational purposes in electronic or print form. You must obtain permission for any other use. Electronic or print copies may not be offered, whether for sale or otherwise to anyone who is not an authorised user.

Improving alliance projects through facilitation

Anne Kokkonen, SimLab, Aalto University

anne.kokkonen@aalto.fi

Teemu Lehtinen, SimLab, Aalto University

teemu.lehtinen@aalto.fi

Rita Lavikka, SimLab, Aalto University

rita.lavikka@aalto.fi

Abstract

Alliance and other collaborative project delivery models such as integrated project delivery (IPD) represent a solution to decrease the fragmentation in the construction industry. New technology such as building information modelling (BIM) is also claimed to introduce more integration into the design and construction processes. However, an intensified collaboration is required for successful alliancing and BIM processes. The intensified collaboration does not seem to occur automatically after committing to a contract, but might often require help in the daily project activities. Facilitation is an activity used in other industries to help in accomplishing tasks by concentrating on the social processes of groups performing the activities. Currently, very little is known about the facilitation in the context of construction projects. Facilitation literature suggests that facilitation can support collaborative task performance with three elements: 1) the management of group process, 2) the management of content, and 3) facilitator's substantive expertise. With a qualitative case study approach, we studied what kind of facilitation occurs in a Finnish alliance project and how current facilitation methods meet the project needs. The results suggest the presence of all the three facilitation elements, but also suggest possibilities for improvement. The results connect facilitation literature to collaborative construction projects. The empirical analysis also offers practical suggestions on how to apply facilitation in construction projects efficiently.

Keywords: Facilitation, alliance, construction, management, collaboration

To be referenced as:

Kokkonen, A., Lehtinen, T. & Lavikka, R. 2016 Proceedings of the CIB World Building Congress 2016: Volume II - Environmental Opportunities and Challenges. Constructing Commitment and Acknowledging Human Experiences. IN: Prins, M., Wamelink, H., Giddings, B., Ku, K. & Feenstra, M. (eds.). Tampere, Finland, Vol. 18, p. 498-509

1. Introduction

Alliance and other collaborative project delivery models such as integrated project delivery (IPD) represent a solution to decrease the fragmentation in the construction industry (Lahdenperä, 2012). Furthermore, new technology such as building information modelling (BIM) is claimed to introduce more integration into the design and construction processes (Succar, 2009). However, successful alliancing and BIM processes require intensified collaboration (Alhava et al., 2015). Collaboration has been studied as an essential element of construction projects (e.g. Cicmil and Marshall, 2005) but it does not occur automatically after signing a contract, it is rather created in daily practices (Smits and van Marrewijk, 2012). Meetings are key events in a project where the representatives of the stakeholders perform collaboration. This collaboration can be enhanced with facilitation. Facilitation is scarcely studied in the construction project context, even when it is known that facilitation can help meetings to be more efficient (Vivacqua et al., 2011). The existing literature does not describe what kind of facilitation is performed in construction projects.

Within this study, we ask what kind of facilitation activities are performed in the meetings of an alliance project and how current facilitation methods meet the project needs. We observed two meetings, a formal design meeting and an informal designer collaboration meeting, of an alliance project in Finland to understand the various facilitation activities. The findings help us understand the role of facilitation in inter-organizational collaboration in alliance projects. The paper is structured as follows, the relevant literature on the construction sector and facilitation are presented. Then we describe the empirical case and methods. This is followed by presenting the results and the discussion based on results. We conclude by discussing the potential of facilitation in the context of inter-organizational construction project management meetings.

2. Facilitation of Collaboration

2.1 Facilitation of Collaboration in an Alliance Construction Project

Collaboration between construction project parties is crucial in order to design and construct buildings that meet the quality needs of customers. Unfortunately, collaboration in construction projects is often hindered by traditional design-bid-build contracts and silo-based working methods. Relational contracting, such as alliance contracting is a promising way to improve collaboration in construction projects. Alliance contracts usually include two or more parties who decide to cooperate throughout the project, based on 'shared risk and shared reward' thinking. In Finland, alliance contracts have been mainly used in infrastructure projects that include lots of uncertainty and complexity (Lahdenperä, 2011). Relational contracting has been considered to facilitate collaboration because it steers the project parties towards shared objectives. However, the relational contract alone does not suffice as a facilitative mechanism, but also, organizational mechanisms are needed (Lavikka et al., 2015).

Alliance projects can use several organizational mechanisms, such as a joint management and decision-making structure, early involvement of key project parties, alliancing workshops, co-location of teams, transparent financials, and lean principles of design, construction and operation (Lahdenperä, 2012).

Jefferies et al. (2014) have also found that alliance projects can benefit from the facilitation of workshops that include both office and site personnel. (Jefferies et al., 2014) However, facilitation is not a trivial task and it requires facilitation skills (Hogan, 2002).

Research on facilitation in the construction project context is still scarce. Few studies exist such as Pala et al.'s (2014) work on ICT as a facilitator of a collaboration process. They found that ICT-enabled inter-organizational information exchange (Pala et al., 2014). Another study about facilitation in the construction sector context discusses intensive big room as a facilitator that enables value co-creation with the customers (Alhava et al., 2015). However, in this paper, we focus on facilitation that takes place in project meetings and where a facilitator is a person. Davis and Love (2011) and Rowlinson et al. (2005) studied alliance contracting and found that trust, commitment and open communication need to be maintained throughout the alliance relationship. Constant facilitation was found important to build open communication between project parties. According to Lahdenperä (2009:31), a facilitator "can be used to promote team formation and evaluate workshop performance." Professional, external facilitators seem to be used in alliance projects (Rowlinson et al., 2005) but to our knowledge, the practices and success of internal facilitators in construction project meetings is an unexplored research area.

2.2 Facilitation of collaboration in group situations

Facilitation aims to aid accomplishing tasks (Keltner, 1989). It has been studied in different circumstances such as a mode of management performance (Raelin, 2012), as enhancing collaboration in meetings (Cooren et al., 2006) and as helping group problem solving (Keltner, 1989). A great part of the literature on facilitation concerns group situations such as meetings and workshops. Earlier literature affirms that facilitation can help meetings to be more efficient (Vivacqua et al., 2011). Apart from efficiency, facilitation has also been suggested to have some positive effect on the satisfaction of the participants as well as the consensus of the group, at least in cases where facilitation is not too rigid (Vreede et al., 2002). These positive effects are welcomed as meetings can be unproductive, costly and dissatisfying (Romano and Nunamaker, 2001).

As facilitation aids to accomplish tasks, it also intervenes in the process and activities of a meeting. Concerning this, a facilitator needs to decide how strongly he or she should intervene in the meeting. If facilitation is too strong, the participation might reduce when a participant becomes more passive and leans on a facilitator (see Miranada and Bostrom, 1999). The facilitator can also be an outsider of group tasks (Hogan, 2002). In this case, the facilitator does not have his or her own interest involved in the meeting outcomes (Huxham and Cropper, 1994). Scholars such as Griffith et al. (1998) argue that facilitator should be neutral and not comment on the context of the meeting. However, the facilitator working also with the group tasks might have a better understanding of the relevance of the outcomes. As technology can be applied to aid facilitation (Vivacqua et al., 2011), technology or other artefacts can have a great role in a group process (Cooren et al., 2006).

The activities of group facilitation can be divided by the way they contribute to the task performance of the group. Earlier literature suggests the facilitation activities can be divided based on if they influence the content of the meeting or group process (Eden, 1990). Later Huxham and Cropper (1994) extended

these ideas of facilitation and included a third category as influencing the decisions with expertise. The first facilitation area, the *content* of the meeting, means that a facilitator can manage the content of the meeting, by collecting information on the problem, leading the thinking and discussion of the group (Huxham and Copper, 1994). The activities found by Clawson and Bostrom (1996), can also be considered here as relating to the content. These are clarifying and integrating knowledge, encouraging multiple perspectives, presenting information to the group and keeping group outcome-focused. The second category concerns activities in which the facilitator can influence the *group process*. This category can include managing group interaction, managing meeting-design, managing the relationships between individuals, and tracking and responding to the needs of the group (Huxham and Copper, 1994). The following activities found by Clawson and Bostrom (1996) can also be considered as relating to group process; creating a participative environment, applying well-suited technology, managing conflict and negative emotions, managing flexible considering involvement of the situation. The third category is the group's decision making that facilitator can give *input with expertise* (Huxham and Cropper, 1994). In this case, the facilitator has some expert knowledge concerning the substance of a decision. In facilitation situation, these three areas of facilitation relate to each other.

3. Research Approach and Methods

3.1 The Case Study of an Office Building Alliance Project

We conducted a qualitative case study of an alliance project in Finland. A case study strategy allows the investigation of a contemporary phenomenon that is difficult to separate from its context (Yin, 1989). Thus, the case study method enabled the investigation of facilitative activities in the alliance project. The aim of the €12 million alliance project was to build a 6-story, 6000 square meter office building on a tight lot in the middle of an operational campus area in Southern Finland. The project started in 2012, the construction phase started in the fall 2013 and the project was finished in 2015. The alliance contract was made between an owner and a general contractor but an architect and design engineers joined the alliance project with cost reimbursable contracts later on. The owner was also represented by the end user organization and a construction management company in project meetings.

3.2 Data Collection

Our overall data consists of six initial interviews in 2013 and seven follow-up interviews in 2014 with key representatives of participating organizations. In addition, we collected video data during 2012 and 2013 from 12 different meetings on different organizational decision-making levels. The meetings on higher decision-making level were an alliance executive group meeting, an alliance project group meeting, and an official design meeting. Additionally, the meetings on lower decision-making level were an unofficial designer collaboration meeting and a BIM clash detection meeting.

For this study, we chose two meetings, which we compared to understand the similarities and differences in the facilitation activities (Table 1). The two meetings were chosen because they represented typical formal and informal meetings in the project. A representative from the general contractor facilitated both meetings. By comparing these two meetings, we gained understanding from two different facilitation events within a single project.

Table 1: The characteristics of the meetings

<i>Meeting Characteristics</i>	<i>Formal meeting (Official Design Meeting)</i>	<i>Informal meeting (Designer Collaboration Meeting)</i>
<i>Date</i>	January 8 th 2013	January 8 th 2013
<i>Duration</i>	2.25 hours	1.5 hours
<i>Usual occurrence</i>	Bi-weekly	When needed by any of the participants, but often once or twice a week.
<i>Participants</i>	13 participants: HVAC engineer, owner, electric designer, end-user, project engineers, structural engineer, architect, geoplanning, and construction management consultant.	6 participants: General contractor, architect, structural engineer, geoplanning, electrical engineer, and end-user.
<i>Facilitator</i>	General contractor (project manager)	General contractor (project engineer)
<i>Topics discussed</i>	Safety, clearance, planning requirements, cost effects of plans, and BIM modelling.	This time excavation work and the bypass of a tunnel, but usually topics concern the design of the facility or plot.
<i>Setting</i>		

3.3 Data Analysis Process

The data analysis proceeded in five phases. First, we (three researchers) watched the two meeting videos and discussed them to agree on how to proceed with the data analysis. Second, each researcher watched the videos again on their own and searched for facilitation activities taking place in the videos. Third, each researcher grouped the found facilitation activities following the category of Huxman and Cropper (1994): 1) managing content, 2) managing group process and 3) taking part to a decision with expertise knowledge. 1) *Managing content* meant the activities when the facilitator manages what is discussed and for how long. 2) *Managing group process* referred to managing the ways the issues were dealt with. 3) *Taking part to content by managing with facilitator's expertise* referred to activities where the facilitator's own expertise was used to take part in making decisions. Fourth, to understand the three categories more profoundly we used Clawson and Bostrom's (1996) findings on facilitation activities as described in the theory section. Using these facilitation activities, we performed further analysis round as collating original categorization to more detailed sub-activity level. Finally, we compared the two meetings to identify which of the facilitation activities were emphasized in each meeting. The overall analysis process followed deductive video analysis approach by Derry et al. 2010. The results are presented in the following section.

4. Results

The observed meetings differed both by the nature of the meeting and the facilitation activities found in the meeting. Table 2 presents the facilitation activities found in each of the meetings. Activities are categorized into three areas of contribution by Huxham and Cropper (1994) and further classified under sub-activities found in the literature.

Table 2: Comparison of facilitator roles between the formal and informal meeting

<i>Area of contribution</i>	<i>Sub-activity</i>	<i>Formal meeting facilitation</i>	<i>Informal meeting facilitation</i>
Facilitating content	<i>Leading the thinking and discussion</i>	<i>Facilitator (project manager, GC) guides the conversation with a predefined agenda (security risk assessment excel, meeting minutes document) ... ends a conversation as irrelevant in the meeting ... tells that we do not need to discuss this because it is written how it should be done</i>	<i>Facilitator (project engineer, GC) states the topic of the meeting (excavation work and renovation of the tunnel) ... takes the discussion to the next topic when needed ... interrupts a “wild” discussion by increasing the tone and says it will be continued later on</i>
	<i>Collecting information on problem</i>	<i>... asks further questions concerning the project</i>	<i>... asks further questions ... goes through questions from the list</i>
	<i>Encouraging multiple perspectives</i>	<i>... makes sure everything is said concerning an issue by asking if anyone has anything to add</i>	<i>... asks if new knowledge is still needed on an issue</i>
	<i>Presenting information to the group</i>	<i>... uses materials to elaborate the understanding (brochure and material of the façade, 2D drawing)</i>	<i>... uses materials to elaborate the understanding (2D drawings on screen and paper, photos)</i>
	<i>Clarifying and integrating knowledge</i>		<i>... synthesizes the talk and takes notes ... asks if the knowledge is certain ... clarifies the distribution of work</i>
	COMPARISON		<i>Emphasis on leading the thinking and discussion</i>
Facilitating group process	<i>Managing group interaction</i>	<i>Facilitator (project manager, GC) was called formally as “Chairman” by others ... sounded tough and formal when addressing participants</i>	<i>Facilitator (project engineer, GC) lets others talk freely and think together</i>
	<i>Creating participative environment</i>	<i>... asks everyone to share their key points one at a time but not reading from the document (as “everyone knows how to read”)</i>	<i>... appoints one participant to start with the status update ... asks if someone wants to say something</i>

	<i>Tracking and responding to the needs of the group</i>	... says no need to repeat things that were said earlier in the meeting ... asks if an issue should be written down (project engineer takes notes)	... is friendly and calm, confirms often ... asks if the information can be sent via email to another designer
	<i>Managing conflict and negative emotions</i>	... makes no jokes (formal and serious atmosphere)	... makes few jokes (less formal atmosphere, some laughing in the beginning)
	<i>Applying well-suited technology</i>	... uses projector to show relevant documents	... uses a projector to show relevant documents ... uses laser pointer to point out relevant areas on the screen
	COMPARISON	<i>Emphasis on managing group interaction</i>	<i>Emphasis on creating participative environment and applying well-suited technology</i>
Taking part to content by facilitating with expertise	<i>Giving input with own expertise</i>	Facilitator (project manager, GC) answers questions by CM consultant (about design review, maintenance manual, site fences) ... defines that the tunnel is more acute issue ... comments risks in the security risk assessment document	Facilitator (project engineer, GC) says this is important knowledge on a matter ... interrupts to say that energy company will not give permission and asks further details
	COMPARISON	<i>More input with expertise</i>	<i>Less input with expertise</i>

The formal meeting was an official design meeting held bi-weekly and facilitated by the project manager from the general contractor. The meeting had a predefined agenda in the form of meeting minutes and the facilitator's role was to make sure that all topics on the agenda were covered during the meeting. The nature of the discussion was more expressive rather than conversational as the participants mostly shared their own status updates under each topic. In *facilitating content*, the emphasis was on leading the thinking and discussion. The facilitator guided the conversation with the predefined agenda and ended irrelevant topics fast to keep the discussion on track and on time. Regarding *facilitating group process*, the emphasis was on managing group interaction. The interaction was formal and even tough at times; some participants called the facilitator formally as "Chairman" when addressing the meeting. Finally with *taking part to content by facilitating with expertise*, the facilitator gave more input with her own expertise when compared to the facilitator of the informal meeting.

The informal meeting was a designer collaboration meeting for designers on an as-needed basis and facilitated by the project engineer from the general contractor. The meeting had a predefined topic but the nature of the discussion was casual and interactive. The participants could bring various issues to the conversation and often used paper drawings or 3D models on the screen to elaborate the understanding. Regarding *facilitating content*, the emphasis was on clarifying and integrating knowledge. The facilitator synthesized the talk, took notes and clarified the distribution of work

between the designers. In *facilitating group process*, the emphasis was on creating a participative environment and applying well-suited technology. The facilitator appointed participants to share their perspectives and often asked if someone wanted to say something on an issue. He also used a laser pointer to point out relevant areas on screen as 2D drawings and 3D models were often difficult to interpret. Finally, with *taking part to content by facilitating expertise*, the facilitator gave little input with his own expertise but rather let the participants think freely and in collaboration.

In addition to the facilitation activities described by Huxham and Cropper's (1994) categories, we also observed some other elements that influenced the interaction in the meetings. Both meetings were rather long and did not have any breaks to energize the participants. The formal meeting used some methods to build rapport among the participants. First, they had a rule that the person, who comes late to the meeting, will bring some pastry for others to the next meeting. This seemed to work as a nice icebreaker to start the meeting. Second, the client assessed the project team with Plus/Delta at the end of the meeting. This gave the client an opportunity to articulate to others what they appreciated the most (plusses) and what they thought needed improvement (deltas) in the project. The informal meeting did not use any specific methods for rapport building but there was more joking and laughing at least in the beginning of the meeting.

5. Discussion

Huxham and Cropper's (1994) categories are based on single client consultancy situations. In a case of collaboration between organizations, facilitation might be even more important because individuals from different companies and professions might have different communication practices. The findings show that facilitating the *content* in the meetings was mostly about leading the conversation, clarifying and integrating knowledge. This area of facilitation concerns what is discussed in the meeting (Huxham and Cropper, 1994). When the facilitator decides which topics are to be discussed, s/he exercises her/his power. To create a collaborative meeting, the facilitator should make sure that the discussed topics include important issues from the viewpoints of all stakeholders. Integrating knowledge potentially also aids collaboration as it can enhance common understanding.

Our findings on *facilitating group process* were mostly about managing group interaction and creating a participative environment as well as applying technology. Facilitating group process can create better relationships and trust among the participants by managing, for example, how interaction is performed. Good collaboration usually demands to create trust and relationships between individuals, especially in inter-organisational context (Batt and Purchase, 2004). Facilitation can enhance relations by managing active and pleasant interaction. Thus, facilitation of group process in collaborative projects should emphasize active interaction between individuals. The facilitator can also emphasize the relationships by offering open and friendly atmosphere.

Finally, our findings on *facilitation with expertise* show that the facilitator as a representative of the general contractor had expert knowledge and could intervene with this expertise to decisions. When one of the company representatives acts as a facilitator, there is a danger that her/his perspective is highlighted more than other companies' perspectives. An outsider should act as a facilitator if this

danger needs to be avoided. In the studied meetings, the general contractor as a facilitator seemed to work without significant problems.

Overall, facilitator seemed to help to create more effective meetings. Also, facilitation seemed to influence the aspects of collaboration and trust which are valued in the specific project. The facilitator role should be given to a person who is skilled in enhancing collaborative practices that are structured socially. This could be especially important in projects where deep collaboration is needed on different levels. The analysis of the results reveals differences between these two meetings. The meetings can be arranged and performed in different ways. It is good to reflect what kind of facilitation would be suitable for the objectives of the meeting and purposes of the project. The findings suggest that facilitation methods depend on the purpose and context of the meeting.

6. Conclusions

Our study presents the performed facilitation practices in two types of meetings and compares them. Facilitation has been studied in different contexts, but few studies have considered facilitation as an important part of construction project management. At its best, facilitation in an alliance construction project helps the project parties to make better decisions and design solutions. However, based on the study it can be concluded that the full potential of facilitation is not always used. When the facilitation was creating effectiveness in the meetings, it could have been used more reflectively to create collaborative and efficient meetings. The facilitators in the studied project were not trained professionally for facilitation practices. Training on facilitation skills and methods could create more purposeful and useful facilitation. Additionally, reflection and planning concerning facilitation can create purposeful facilitation for the specific meeting or project, instead of only following general facilitation guidelines.

For practitioners, our results suggest that facilitation might bring benefits in inter-organizational meetings. The facilitation should be in line with the objectives and values of the specific meeting and overall project. In alliance projects, collaborative decision making can be enhanced by facilitation. In a meeting, practical issues such as breaks, working technology and the functionality of space also play a significant role and should be taken into account as part of the facilitator's role. Future research could measure what kind of financial benefits the facilitation could offer in the alliance project. Also, more research is needed to understand which kind of facilitation techniques and activities could enhance collaboration in construction projects. In addition to the facilitation activities, it would be useful to identify critical project events where facilitation can enhance project performance.

This paper is an important start for the discussion on the benefits and drawbacks of facilitation in the construction project context. The full potential of facilitation is not yet known, but it seems that collaborative work and relational projects are becoming more common in the construction sector. The use of building information modelling requires even more intensive collaboration between construction project parties. The sector is characterized by fragmentation and this has not been a fruitful platform for learning collaboration skills. As facilitation is a way to promote good collaborative work practices between construction project parties, the use of facilitators and training facilitation methods will probably grow within the construction sector in the future.

Acknowledgements

The research reported in this paper has been conducted in RYM PRE Model Nova and CoCoNet research projects. RYM PRE Model Nova research project “New Business Model based on Process Network and Building Information Modelling” belonged to the Built Environment Process Re-engineering research program, coordinated by the Strategic Centre for Science, Technology and Innovation of the built environment (RYM Ltd.) in Finland. CoCoNet research project “Co-creation and Coordination in Emerging Value Networks – the double role of ICT-enabled modelling tools and methods” is conducted by the Enterprise Simulation Laboratory SimLab, Department of Industrial Engineering and Management, Aalto University School of Science, Finland. Data for this paper was collected during the Model Nova project, whereas the paper has been written during the CoCoNet project. The Academy of Finland (for CoCoNet project) and the Finnish Funding Agency for Technology and Innovation Tekes (for RYM PRE Model Nova project) with partner companies have financially supported the research, which is gratefully acknowledged.

References

- Alhava O., Laine E., Kiviniemi A. (2015) “Intensive Big Room Process for Co-creating Value in Legacy Construction Projects”, *ITcon* volume 20, Special Issue ECPPM 2014 - 10th European Conference on Product and Process Modelling, 146-158, (available online http://www.itcon.org/cgi-bin/works/Show?2015_11).
- Batt, P.J. and Purchase, S. (2004) “Managing collaboration within networks and relationships”, *Industrial Marketing Management*, 33(3): 169-174.
- Cicmil, S. and Marshall, D. (2005) “Insights into collaboration at the project level: complexity, social interaction and procurement mechanisms”, *Building Research & Information*, 33 (6), p.523–535.
- Clawson, V. and Bostrom, R. (1996) “Research-driven facilitation training for computer-supported environments”, *Group Decision and Negotiation*, 5 (1), 7-29.
- Cooren, F., Thompson, F., Canestrato, D. and Bodor, T. (2006) “From agency to structure: Analysis of an episode in a facilitation process”, *Human Relations*, 59(4): 533–565.
- Davis, P. and Love, P. (2011) “Alliance contracting: Adding value through relationship development”, *Engineering, Construction and Architectural Management*, 18(5): 444-461.
- Derry, S., Pea, R., Barron, B., Engle, R., Erickson, F., Goldman, R., Hall, R., Koschmann, T., Lemke, J., Sherin, M. & Sherin, B. (2010) “Conducting Video Research in the Learning Sciences: Guidance on Selection, Analysis, Technology, and Ethics”, *Journal of the Learning Sciences*, 19:1, 3-53

Eden, C. (1990) *The unfolding nature of group decision support: two dimensions of practice*. In Tackling Strategic problems: The role of group decision support. Eds. Eden and Radford, 48-52. Sage, London.

Griffith, T. L., Fuller, M. A. and Northcraft, G. B. (1998) "Facilitator Influence in Group Support Systems: Intended and Unintended Effects", *Information Systems Research*, 9 (1): 20–36.

Hogan, C. (2002) *Understanding Facilitation - Theory and Principles*, Kogan Page Limited, London, UK.

Huxham, C. and Cropper, S. (1994) "From many to one—and back. An exploration of some components of facilitation", *Omega: International Journal of Management Science*, 22(1): 1–11.

Jefferies, M., John Brewer, G. and Gajendran, T. (2014) "Using a case study approach to identify critical success factors for alliance contracting", *Engineering, Construction and Architectural Management*, 21(5): 465 - 480.

Keltner, J. (1989) "Facilitation: Catalyst for Group Problem Solving", *Management Communication Quarterly*, 3(1): 8–32.

Lahdenperä, P. (2009) *Project alliance. The competitive single target-cost approach*. VTT Research Notes 2472. Espoo, Finland.

Lahdenperä, P. (2011) "Towards the use of project alliance: joint development of a team selection procedure as an example of steps taken", *Management and Innovation for a Sustainable Built Environment*. Amsterdam, the Netherlands.

Lahdenperä, P. (2012) "Making sense of the multi-party contractual arrangements of project partnering, project alliancing and integrated project delivery", *Construction Management and Economics*, 30(1): 57–79.

Lavikka, R., Smeds, R. and Jaatinen, M. (2015) "Coordinating collaboration in contractually different complex construction projects", *Supply Chain Management: An International Journal*, 20(2): 205-217.

Miranda, S. M., and R. P. Bostrom. (1999) "Meeting Facilitation: Process versus Content Interventions," *Journal of Management Information Systems* 15(4): 89–114.

Pala, J, Graham, J. Gajendran, T. (2014) "Contractor practices for managing extended supply chain tiers", *Supply Chain Management: An International Journal*, 19(1): 31-45.

Raelin, J. (2012) "The manager as facilitator of dialogue", *Organization*, 20(6): 818–839.

Romano, N. and Nunamaker J. (2001) "Meeting analysis: findings from research and practice", *Proceedings of the 34th Annual Hawaii International Conference on System Sciences*.

Rowlinson, S., Cheung, F. and Fiona, Y. (2005) “Success factors in an alliancing contract - A case study in Australia”, *Queensland University of Technology Research Week International Conference*, QUT Research Week 2005.

Smits, K. and van Marrewijk, A. (2012) “Chaperoning: practices of collaboration in the Panama Canal Expansion Program”, *International Journal of Managing Projects in Business*, 5 (3), p.440–456.

Succar, B. (2009) “Building information modelling framework: A research and delivery foundation for industry stakeholders”, *Automation in Construction*, Vol. 18 No. 3, pp. 357–375.

Vivacqua, A. S., Marques, L. C., Ferreira, M. S. and de Souza, J. M. (2011) “Computational Indicators to Assist Meeting Facilitation”, *Group Decision and Negotiation*, 20(5): 667–684.

Vreede, G.-J. de, Niederman, F. and Paarlberg, I. (2002) “Towards an Instrument to Measure Participants’ Perceptions on Facilitation in Group Support Systems Meetings”, *Group Decision and Negotiation*, 11(2): 127–144.

Yin, R. K. (1998) “The abridged version of case study research: Design and method”, In Bickman, Leonard (Ed); Rog, Debra J. (Ed), *Handbook of applied social research methods*. (pp. 229-259). Thousand Oaks, CA.