

## **A GUIDELINE FOR PARTNERSHIP BETWEEN CLIENT AND CONTRACTOR IN INFRASTRUCTURE PROJECTS IN GERMANY**

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### **Abstract**

*The major subject of this paper is the actual situation of large infrastructure projects in Germany based on a literature review of experiences in this field all over the world. The results of a field study show that many clients and contractors are dissatisfied with the current situation and wish for a change. To start with this change a guideline for partnership between clients and contractors in infrastructure projects was developed at the chair of Project Management at the University of Kassel by working groups of practitioners and scientists. This guideline contains a preamble and seven elements referring to clear project specifications, defined processes for project changes, fair risk handling, common data systems, regulations for responsibilities and decisions, contractual alternative dispute solutions and contractual incentive regulations. At present this guideline is in the testing phase to improve it, if necessary, and to collect experiences for a possible binding implementation in infrastructure projects in Germany.*

**Keywords:** Partnering, collaboration, cooperative contracting, incentive based project optimization

## **INTRODUCTION**

All over the world the situation in large construction projects seems to be very similar. Many projects have a cost and time overflow and the relationship between client and contractor is not cooperative. The project participants often complain about too many disputes and litigations. The typical situation in the German construction and plant market and the market in other countries has been characterized by Girmscheid (2005), Ingram and Bennet (1997) and Spang (2009) as follows:

- Dissatisfied clients and distrust between client and contractor/s
- Decrease of know-how due to “lowest price-principle”
- Increasing expenses for claim and anti claim management
- A growing number of disputes and litigations between clients and their contractors

- Low rate of return and high risk of business failure for contractors.

Starting from United Kingdom, the United States and Australia in the nineties various partnering and alliancing models for the relationship between the main parties have been developed in the last years. There are for example: the early contractor involvement in the UK, the alliance contracting in Australia or the construction management in the US to enumerate the most common ones. Changes towards more partnership between client and contractor can be seen, especially in the private sector. However, the international construction market is rather different in matters of market conditions, the legal situation and public authorisations. In Germany the situation is still not satisfying at all, especially in the field of public infrastructure sector. Even though many people wish a change it is however difficult to introduce fundamental changes in the relationship between client and contractors. The current legal situation in public tendering and public financing restricts the options of a change very much. This applies as well to the strict and very citizen related provisions for the legal authorizations for infrastructure projects in Germany ("plan approval"). In spite of these very challenging preconditions, a change of the client-contractor-relationship towards more partnership is necessary and without alternatives.

## **THE RESEARCH WORK**

Initiated by the Chair of Project Management at the University of Kassel a group of researchers, practitioners and public clients started a research project towards partnering in infrastructure projects in 2005. The research is sponsored by the German Federal Ministry of Transport, various public clients, contractor organizations and several contractors. The principal target of the project was to develop a partnering model for public infrastructure projects respecting the specific conditions of public financed road and railway projects in Germany. Following this target the detailed project objectives were defined as:

- Reduction of conflicts
- Avoiding litigations
- Optimisation of the project in sense of value engineering
- Raising the level of efficiency and finally
- Reduction of construction time and saving of money

### **Literature review**

A global literature review should show how large and complex infrastructure projects are managed in other countries. In the beginning of the nineties the situation in the British construction market was very similar to the current situation in Germany. Hence, "Her Majesty's Stationery Office" assigned Sir Michael Latham to analyze the reasons for the dissatisfying situation. In his report "Constructing the team" (Latham 1994) he demands for a rethinking of the tendering system, to evaluate the contractor not only by price criteria but also by quality criteria. Beyond he demands to establish preconditions to achieve a win-win situation between client and contractor, to be managed through a partnering approach. Some years later Egan (1998) recommended in his report "Rethinking Construction" that the construction industry should use best practices from other industries and implement them in their processes.

Furthermore clients and contractors should work together to achieve a common goal. To reach these goal, he also demanded for a partnership between clients and contractors. Especially in complex projects with limited budget the traditional way of project handling seems to be insufficient (Sakal 2005). The idea of a new concept was born in the early nineties with the Andrew Project of the Oil and Gas Company BP. The project had so many uncertainties that the project success was not sure. For that, a new way of contracting had to be established. Contractors were now chosen not only by price criteria and the goals of the further project handling were fixed with a fair risk sharing between all parties, better and faster solution of conflicts without court processes and a pain and gain regulation for exceeding respectively failing the project targets. The outcome was the first form of an alliance contract, which leads to a satisfactory project for the client with savings of more than 20 % (Rooney 2006).

This good result was the impulse for the Australian construction market to adapt and to develop this way of contracting. In the meantime, until today, alliance contracts are used in Australia in the private and public sector more than anywhere else in the world (Ross 2009).

Bennett and Jayes (1998) identified three levels of partnering:

- First Generation Partnering – Project Partnering
- Second Generation Partnering – Strategic Partnering
- Third Generation Partnering – System Partnering

The distinction in three different levels of partnering is due to the sometimes difficult preconditions in creating a project atmosphere which allows a collaborative way of working. To reach higher levels of partnering is even harder. Tyler and Matthews (1996) and Black et al. (2000) analyzed these preconditions. Thereby they identified the following important elements, which have to be fulfilled: Trust, common goals, communication, defined problem resolution, clear understanding of roles, commitment from senior management and incentives.

Analyzing the benefits of partnering is a big challenge, because it is hard to define how the changes contributed to the improvements (Bresnen and Marshall 2000/a). Black et al. (2000) analyzed it by a survey in the construction industry. They identified the following benefits:

- Less adversarial relationship
- Increased customer satisfaction and better understanding of each other
- Improved time-scales, quality and reduced costs (improved return on resources)
- Risk sharing

Bresnen and Marshall (2000/b) analyzed nine partnering projects in the UK contracted in different ways like long-term agreements, project alliances or construction management contracts. They found a very high level of satisfaction of the parties not least because all projects were finished in time and did not exceed the planned costs. Pakala et al. (2007) compared various innovative partnering models all over the world and found similar results, such as higher client satisfaction, reduced time of construction and a better cost control. Chan et al. (2007) compared partnering practices between Australia and Hong Kong. They found that partnering leads to a stronger teamwork with more cooperation, which results in a better overall performance. Manley (2002) conducted an international survey of eight Australian and ten international road agencies. The general feedback concerning their partnering experiences was good, and most of them would like to extend their engagement in partnering projects.

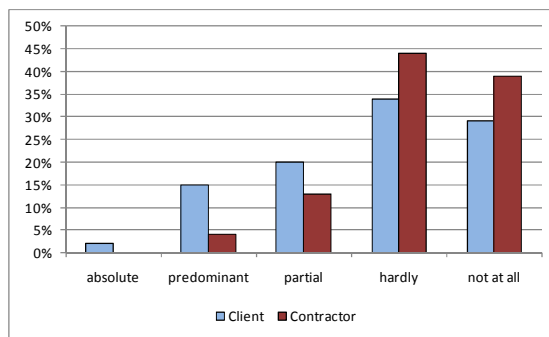
The above mentioned results should not suggest that problems do not occur in partnering projects, there are examples for problems as well. In the nine projects, analyzed by Bresnen and

Marshall (2000/b), problems were solved without claims or litigations. Lu and Yan (2007) state that partnering is not always the master key to project success. It is necessary to evaluate for each project if partnering is applicable and useful.

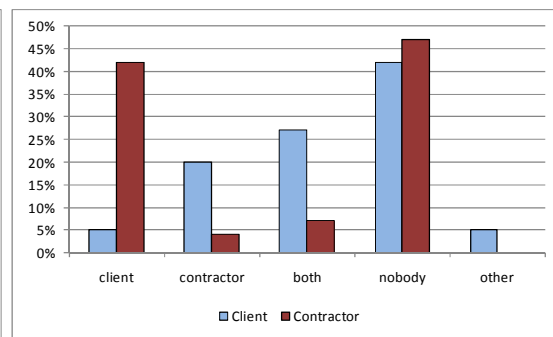
The positive outcome of partnering can only be achieved by contributions from both parties but the benefits of this way of working will outweigh the efforts. It is really not satisfying, that reliable methods for evaluating the effect of partnering do not exist, but it is very difficult in respect of the uniqueness of projects in general. A research work in respect to this subject is in preparation at the University of Kassel.

## Field Study

Based on the results of the literature review a field study about the relationship between clients and contractors in the German construction industry was initiated (Spang et al. 2009). Half of the 130 respondents were clients respectively contractors which allows a good comparison between the answers of clients and contractors. The study showed clearly, that clients and contractors rarely feel 'partnership' in their projects, that they do not feel comfortable with the current situation and that they mostly do not see one party as a winner, which will be described more precisely below.



**Figure 1:** Satisfaction with the current situation  
(Spang et al. 2009)



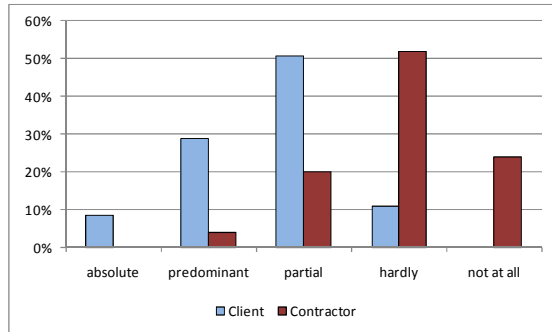
**Figure 2:** Winner of the current situation  
(Spang et al. 2009)

Figure 1 shows the results of the question "Are you satisfied with the current situation?" More than 80% of the contractors and more than 60% of the clients state that they are dissatisfied. Only 17% of the clients and 4% of the contractors are content with the current situation. In general the contractors are more dissatisfied with the current situation than the clients. This may be due to the strong public clients, which can impose conditions and prices to the contractors. This imbalance of power may be still amplified by the big numbers of companies in the German construction market.

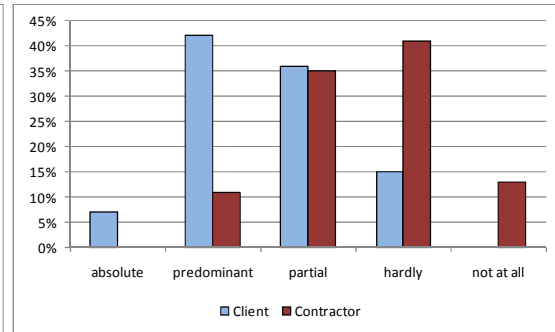
The dissatisfaction of the clients may be based on the more and more intensive claim management of the contractors, which try to improve their insufficient price levels by this way. Most of the disputes and litigations are consequences of disagreements about the contract and about claims and a loss of trust.

Another reason for the dissatisfaction of both parties may be found in the answers to the question "Who is the winner of the current situation?" (Fig. 2). About 45% of all participants think that neither the client nor the contractor is the winner, whereat client and contractor have the same perception. About 42% of the contractors answered that the clients are the winners and - in contrast - just 20% of the clients see the contractors as winners. Only 7% of the contractors, but 27% of the clients see both parties as winners. But especially the benefit

for both parties, so called ‘win-win-situation’, is essential for working in partnership. Thus, a relationship, where so many participants see no winner or the other side as the winner, is not a reliable base for a successful project. The reasons for this situation may be based partly on the principle-agent-theory, but otherwise on the lack of common objectives and of accepting a win-win-situation.



**Figure 3: Fair risk allocation**  
(Spang et al. 2009)



**Figure 4: Clearness of the contractually agreed scope**  
(Spang et al. 2009)

Further results can be seen in Figure 3 and Figure 4, where the answers of clients and contractors dispersed most, for example concerning the risk allocation. About 35% of the clients stated, that the risk allocation is at least predominantly fair. Another 50% see it partially fair. In contrast 75% of the contractors believe that the risk allocation is hardly fair or completely unfair. An explication for that might be that clients often try to shift all the risks to the contractors. This could be no problem for the contractors if they could consider the risks in their bid. But in the very competitive German construction market there is no space for the consideration of risks. Therefore contractors often are responsible for the risks without achieving a higher “risk-margin” or the risks are cached in the tender documents. The different point of view at the clients side may be due to their mentioned strong position.

Concerning the clarity of the contractually agreed scope the distribution of the answers is similar. The majority of the clients believe that the contractually agreed scope is well described, while the majority of the contractors stated the opposite. The clients are convinced to have a perfect scope based on a design of high quality and the contractors see lacks and space of interpretations. There is no mutual understanding of the scope and this will be the initial point of most of the disturbances and disputes in the projects.

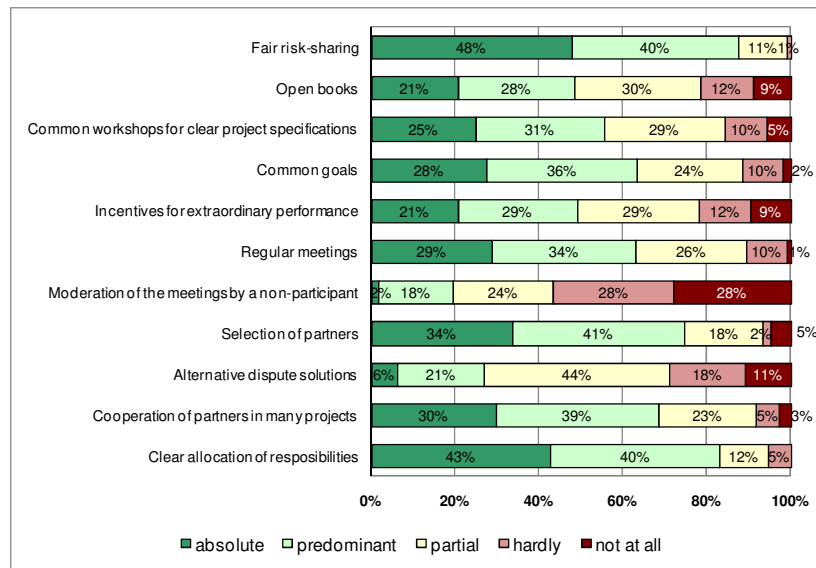


Figure 5: Contribution to partnering (Spang et al. 2009)

Furthermore the participants of the study were asked about possible contributions to partnering (see Figure 5). The given propositions have been deduced from the literature review. The results show that these facts are considered predominantly to be important for working collaboratively. Fair risk sharing and a clear allocation of responsibilities were mentioned to bring the most contribution to collaboration. In contrast, the participants state that moderation of the meetings by a non-participant and alternative dispute solutions are less important, but both are not really common in construction projects in Germany and so the benefits cannot be seen. Other elements, like common goals, common workshops or regular meetings contribute in a medium to high level to establish a collaborative work atmosphere. Cooperation in many projects and selection of partners seem to be well accepted, but they can not be used in public projects in Germany. In general, it must be seen, that most of the participants did not have any experience in partnering projects.

In respect of the results of the study (more results will be found in Spang et. al., 2009) a clear wish for a change towards more fairness and partnership in construction projects can be concluded.

### The partnering guideline

The results of the field study and of the literature review were used for the development of the guideline, which will now be described.

With these results of the literature review and the field study working groups were formed for specific topics, which are identically with the intended elements of the guideline. Each working group consisted of representatives of clients, contractors, lawyers and the chair of Project Management. Every group established one element of the guideline. The intermediate and final results have been discussed in workshops with higher representatives of the participating organizations and companies (“advisory board”). The final result of this process was the “Guideline for partnership between client and contractor in German infrastructure projects”. The guideline contains – starting with a preamble - seven elements. It contains regulations for clients and contractors for working together in partnership regarding the specific preconditions of public financed infrastructure projects in Germany.

## **Preamble:**

The preamble aims for creating an environment that allows clients and contractors to work in partnership. To achieve this goal, basic principles like trust, willingness for cooperation and open communication are described. The preamble has to be signed by leading persons from both parties. The signatures shall be a sign for their willingness to follow the above mentioned facts and to follow the rules set in the guideline. Furthermore the companies will commit themselves to create a company culture which supports their employees to respect the guideline in their daily work. Clients and contractors should start the project with a leap of faith.

## **Element 1: Clear project specifications**

As one result of the field study and the literature review it could be shown that a not well and comprehensively described scope is the main reason for disputes. Hence, element one provides regulations for the design-, the tendering- and the construction phase to enhance the quality of the project specifications. Special regulations for the pre qualification of the planner, exploring the subsoil and the design quality management are some examples of the suggested sub elements. Giving the contractor enough time during the tendering phase allows him to check all documents and ask questions, if necessary. Furthermore a site visit is compulsive during tendering in order to give all potential bidders the opportunity to take a look at the site and its environment, to point out possible problems and to ask questions

During the execution phase, it is advised to implement the conceptual designer in the team of the contractor to do the detailed design. If this is not possible, a minimum solution is to hire the conceptual designer as a consultant in the design-team of the constructor to guarantee a good know-how transfer from the design phase into the execution phase.

Beyond that special review workshops with representatives of the client and contractor are prescribed, which should help to learn from the project and in the project and to share knowledge not only in the own company but also between client and contractor. This knowledge can also be used to help to improve future projects, if it is introduced in a knowledge management.

## **Element 2: Defined processes for project changes**

Even with a good scope quality, differences between the contractually scope and the necessary works will occur. Reasons may be irregularities in the underground and other site conditions, changes by the client or, which is unavoidable for complex construction projects, an incomplete design. To control this process it is necessary to have a defined model with clear and defined specifications. All stages which have to be passed in the change process are mentioned and described to specify “who has to do what in which way until when”. So, the responsible person, the action he has to do, the contents of his actions (like for example documents and its contents) and the time period are fixed in the process-model.

In the beginning of every project the time regulations have to be adjusted for the special circumstances. If these procedures are not respected by one party, the other party can relate to element six of the guideline to find a solution.

### **Element 3: Risk management**

Infrastructure projects are, in addition to the common risks arising in every (construction-) project, fraught with many special risks like underground-uncertainties or high complexity. Hence, it is particularly necessary to identify the risks and establish a qualified risk handling process. Starting in the design phases all risks, identified and not completely cleared, have to be collected and described with their consequences in a risk register. This risk-register will be attached to the tender documents and the bidders have to complete it and implement the described risks in their offer. In the construction period client and contractor will meet in a fixed interval in a so called “risk-committee” to discuss the status of the collected risks, check if the handling of them has to be adjusted and to find out if there are any new risks. For the identified risks client and contractor together have to find ways how to handle the new risks and have to decide who is responsible for them.

### **Element 4: Common data**

In big and complex projects many documents, drawings and information have to be used by both parties and exchanged between them. To handle this data-volume and to assure that everybody deals with the same, actual documents, a common project server with data, such as plans, documents, pictures and time schedules is installed. Moreover this data-server offers a platform for an open communication between the parties. This allows a faster and more comfortable handling of the project data. Thereby a double effort can be avoided and everybody uses the same documents and can be sure to use the newest version. There is access to the project data from everywhere. The common use of the data reduces the potential of conflicts.

### **Element 5: Regulations for decisions and authorizations**

Many conflicts arise or grow up because of unclear responsibilities and late or wrong decisions. Sometimes staff members of the related parties do not have the entitlement to decide about a problem or the other party does not know the right contact person for their concern. For example only 40% of the participants of the above mentioned field study (Spang et al., 2009) state, that they clearly or at least predominantly know the right contact persons. That is why responsibilities and authorisations have to be clearly defined and clearly described in order to be able to take quick decisions, including client and contractor. Decision processes and standards for relevant documents are prescribed as well.

### **Element 6: Conflict solution**

Conflicts or differing points of view are often arising in projects. If there are no quick and adequate solutions for these conflicts they may lead to a deterioration of the climate between client and contractor with a lower willingness to collaboration. Often the consequence of conflicts is a reduction of efficiency and additional works and costs. In the worst case a blockade of the project may occur as a consequence of missing decisions.

Hence conflicts should be solved as soon as possible. Especially disputes concerning money can take a long time or even end up in litigations. This is cost and time intensive and not suitable for the client contractor relationship. To handle and solve the conflicts as early as possible a stage model was created.

On the first, the operational level, the project managers of client and contractor try to find a solution for the conflict. If they don't succeed in a predefined, adequate time, every party has



the right to invoke the next level. On this strategic level, branch managers or managing directors (depends on the size of the organisation) of the two parties look for a solution of the problem. If they also do not find a solution the dispute will be given in an arbitration process. One or three arbitrators will start consultations with both parties in order to find a suitable solution. Subsequently they will formulate an arbitration award, which is binding for all parties until it is cancelled by a formal court decision. Going to court cannot be denied in Germany. Decisions by arbitrators are usually much faster and often cheaper than court decisions. Furthermore the defined process should influence the parties to find suitable solutions in the operational or the strategical level.

### **Element 7: Contractual incentive regulations**

Generally the contractor has to realise the project as contracted. He is not motivated to find special solutions or to optimize the project with advantage for the client. But a project optimization or value engineering can often create a win-win situation for client and contractor – the client gets a better building or traffic line and the contractor gets physical advantages. In each case the chance for a common optimization creates often an atmosphere of trust.

In the first case, the contractor suggests a change or an improvement, with is equal to the contractual solution but cheaper. When he can prove the equivalency of his suggestion and the client agrees with it, he will participate in the savings in a contractual agreed proportion. This could be 50/50 but also 60/40 or 70/30. That means the contractor obtains a bonus and the client saves money for an adequate solution.

In the second case the contractor suggests an improvement with enhancing of the quality but without increasing the costs. When the suggestion is agreed between client and contractor and the target quality is reached, the contractor will get a bonus and the client gets a better work.

In the third case, the contractor finishes his work earlier than contractually agreed. In this case he will also get a bonus for the time of earlier finishing. So the contractor gets a bonus and the client finishes his project earlier.

All of these cases have to be agreed upon between the parties before execution. In each case the client must have an interest in this optimization. He must not accept the proposition; the contractor has no entitlement for the acceptance of his proposition. So, this incentive element has two effects. One is the project improvement for the client, combined with an additional revenue for the contractor, a real win-win situation. The second is the creation of an atmosphere of trust as a precondition for finding such win-win situations.

Due to the very strong boundary conditions for public financed infrastructure projects in Germany, the space for changes is restricted, so a “revolutionary step forward” was not possible. Some of the formulated specifications in the guideline are not new and do already exist in Germany. Others are new, at least for public financed infrastructure projects, as the common project reviews (element one), the common risk handling (element three), the common database (element four), the arbitration process (element six) and the incentive arrangement (element seven). Even when it is no revolution and the model goes not so far than models in other countries, this guideline may be the first step for a collaborative project management in large infrastructure project in Germany.

## TESTING THE GUIDELINE

At present the research project is in its second phase – the testing phase of the guideline. During this phase the research results, fixed in the guideline shall be validated and the guideline is to be tested on its practicability. Thus the guideline is actually applied in two pilot projects. The first project is an upgrading of a highway from one lane in each direction to two lanes in central Germany. The whole site is 1 km long and has total investment costs of about 4m €. The project is just terminated. The second project is a construction of a new motorway in eastern Germany. It is about 8km long with total investment costs of ca. 45 mio €. The contractor consists of a consortium of three companies for the subsoil, bridge and pavement works, so there are more possible interactions between client and contractor. The project started in autumn 2009 and will be terminated in spring of 2012 due to a very hard and long winter period in 2010/2011. Further projects are in preparation.

To collect many information and experiences in applying the guideline, the chair of Project Management is strongly involved in these pilot projects. Thus the clients are strongly supported in terms of the guideline and all observations, results and particularities of the project are to be collected for the evaluation of the pilot phase.

The first findings of these two pilot projects are mostly positive and can be described as follows:

- More collaborative way of working together
- Open communication between client and contractor
- Fair risk allocation, no hidden risks
- Fast solving of problems without litigations
- Optimisation of the whole project (not only monetary, but also qualitative)
- Higher satisfaction of the participants, but also
- Backslides towards confrontative working from time to time,
- Upcoming mistrust because of violation of agreements
- “Bad prices” and “old” organisational structures obstruct the success of partnering.

The review workshops, which have been conducted in both projects, showed a big step towards partnering, because client and contractors participated commonly. The workshops showed as well, that there have been significant changes in the communication and in problem solving as well as in proactively risk handling towards partnering.

After finishing the research project, there will to be discussed, if the public authorities will prescribe this guideline as binding for specific infrastructure projects.

## CONCLUSIONS

As shown above, the current situation in the German construction market is affected by dissatisfaction on both sides – client and contractor. Neither both, nor one of the parties is the ‘winner’ of the current situation. With the guideline a first step to a more collaborative way of working is achieved. The results of the testing phase with the adoption of the guideline in pilot projects has shown big progresses, but structural problems as well. As a result of the different workshops in both pilot projects, it could be seen that all elements of the guideline

act together in a way that the communication between client and contractor became more open and the atmosphere changed for the better. So far all problems could be solved either on the operational level or, in just a few cases, on the strategical level. Till today, the arbitrators have not been contacted. Element seven of the guideline contributed to savings of money for the client. Simultaneously the contractor got some extra money for his ideas. Another step forward to start working in a collaborative way.

Further pilot projects will show if this positive impact will continue. In this case there will be a good chance that the guideline will become a fixed standard for infrastructure projects in Germany.

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