

Integrated Project Delivery Workshop

REPORT

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Report

Integrated Project Delivery Workshop

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Glossary

| Term | Explanation |
|------------------|---|
| IPD | Integrated Project Delivery See par. 2.1.1 for a detailed explanation. |
| ECI | Early Contractor Involvement See par 2.2.1 for a detailed explanation. |
| Project Alliance | The project alliance is a project delivery organisation in which the client and contractor are working together in a single integrated project team, using an alliance contract form. |

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1. Introduction IPD-Workshop

1.1 Reason for the IPD-Workshop

The use of integrated project delivery (IPD) approaches for the delivery of infrastructure projects in Germany is very limited. Recently, the Bavarian State Government has announced that they would like to investigate the possibilities of the use of new awarding and tendering models (mainly IPD-approaches, but also other forms of partnering approaches) for the delivery of infrastructure projects. The Bavarian State Ministry of Housing, Construction, and Transport (StMB) has taken the initiative to learn what it needs to consider when introducing IPD-approaches in Germany and which steps to take. For this reason, StMB and the University of the Bundeswehr Munich – Institute of Construction Management (UniBW) have joined forces with the European NETLIPSE Network to organise a 1½ day workshop with various German client organisations and contracting experts from the European NETLIPSE Network. The workshop took place on 6-7th December 2023 in Munich.

This report contains a description of the workshop and the results. After the introduction of the workshop in this chapter, Chapter 2 will introduce the IPD-concept, followed by the results of the workshop in Chapter 3. This report ends in Chapter 4 with conclusions and recommendations to StMB.

1.2 Objectives of the IPD-Workshop

The objectives of the IPD-Workshop are the following:

- Exchange knowledge and experiences to obtain enough information for StMB:
 - to start a pilot project using an IPD-approach;
 - to decide whether IPD-approaches could be helpful to deliver mid-size (€10-50 mln.) projects;
 - to determine how much time is needed for the IPD contracting process in relation to the standard (fixed price) contracting process.
- Apply NETLIPSE experiences to a pilot project to accelerate the implementation of IPD-approaches for the delivery of infrastructure projects in Germany.
- To document the outcomes of the workshop in a written report, which can be distributed to the participating organisations and the ministry. It should be a reference of findings and recommendations to consider when initiating a pilot project.

1.3 Workshop programme

The workshop allowed for discussions on experiences with the development of partnership-based contract forms for the delivery of transport infrastructure in NETLIPSE Partner organisations. These contract forms include IPD, Early Contractor Involvement (ECI), and Alliance Contracts. During the workshop these experiences were applied to the specific context and conditions present in Germany.

The first day of the workshop entailed an exchange of knowledge and experiences on the most important aspects of project delivery using an IPD-approach. The goal was to determine what StMB would need to do in order to start implementing IPD-approaches, and which key points to address. On the second day, the experiences of the first day were applied on a potential pilot project of the StMB in a pressure cooker set-up.

2. Introduction Integrated Project Delivery (IPD)

2.1.1 What is IPD?

Integrated Project Delivery (IPD) is an innovative project delivery approach that involves intensive collaboration among key project stakeholders, such as the client(s), architects, engineers, and contractors, often from the early stages of a project. This type of approach is most often used in more complex projects, where the project can capitalise most on the contractor's expertise and insights. The idea being that by collaborating in the early stages of a project, involved parties can exchange ideas by contributing their expertise and develop a common vision on the project. This should lead to a more innovative and efficient design as well as a more efficient construction process.

It's important to note that the success of an integrated project delivery approach depends on the commitment and engagement of all stakeholders. Additionally, the specific benefits may vary depending on the nature and complexity of the infrastructure project.

2.2 Potential benefits of using an IPD-approach

2.2.1 Early Collaboration and Input

IPD promotes early collaboration and involvement of key stakeholders from different disciplines. This helps in leveraging the collective expertise and insights of all parties from the beginning of the project, rather than being brought in after the design is completed.

As the integrated team collaborates from the beginning of the project, value engineering opportunities and innovations can be implemented in the design and the construction process can be streamlined accordingly, potentially leading to overall cost savings.

Additionally, potential problems that may arise during construction can already be identified by the contractor early-on, and solved prematurely by implementing solutions in the design. Because of this approach, the likelihood of delays during construction are minimised, resulting in more efficient project delivery timelines (which is a risk-mitigation in itself). This way, the additional time-investment needed in the design phase can be repaid during the construction phase of the project.

2.2.2 Shared Risk and Reward

IPD often involves a shared-risk and shared-reward model (pain & gain). As the client and contractor (and/or other partners) are involved in the joint design and construction of the project, some of the risks and potential gains can be shared between the involved partners. This can foster a sense of ownership and responsibility among the stakeholders, creating a better alignment of interests. In itself that leads to a more unified and cooperative project environment.

2.2.3 Improved Communication

When risks and rewards are shared, there is an inherent incentive to address issues in a way that is best for the project as a whole. Issues in the project can be addressed quickly before they turn into problems. Thus, open and transparent communication, especially in terms of early warning signals, becomes necessary to quickly and collectively find solutions. This can reduce misunderstandings, conflicts, and delays.

2.2.4 Client Satisfaction

The collaborative approach of IPD-contracts enhances client satisfaction by minimising the potential for conflicts. This reduction in conflicts not only saves the typical resources allocated to conflict resolution, claims settlement and legal proceedings but also allows for the allocation of these resources to other purposes. Furthermore, the project delivery experience is significantly improved, leading to greater satisfaction among those actively involved in the project.

3. Results

3.1 Introduction Results

As explained in the previous chapter, applying an IPD-approach in a project requires different methods and tools at different project stages. The workshop findings for each stage are outlined below, showing the specifics of implementing an IPD-approach during that phase and highlighting potential tools or methods that can contribute to a successful delivery of the project in that phase.

When interpreting the results, one should take note that there is not a single 'perfect' way to implement IPD in a project. The workshop results merely showcase how it *can be done*, rather than how it *should be done*. It should also be noted that the results are not an exhaustive list of steps to take, but reflect what was discussed during the workshop. The implementation of IPD should always be tailored to the specific context of the project.

3.2 Initiating a Pilot Project

In order to successfully initiate a pilot project, a couple of steps should be taken:

1. **Clearly define the problem that an IPD-approach will solve**

IPD is not an answer to all problems facing infrastructure projects. For that reason, it should be clear from the start what problem(s) you're trying to solve by using an IPD-approach for your pilot project.

One of the most pressing problems facing StMB is that due to German regulations, StMB currently has to manage multiple small-/medium-sized contractors to deliver a large project. This can be a problem because managing multiple contractors and the interfaces of their output puts a large demand on the already scarce capacity of staff at the road construction offices (local branches) under the supervision of StMB. In addition, when there are many contractors involved, coordination between the contractors is limited which leads to inefficiencies. A successful pilot project should show that implementing an IPD-approach can help StMB to overcome these problems.

2. **Obtain an assignment from the ministry**

Once the clear potential for an IPD pilot project is established, the Head of the project group of the ministry should give the formal assignment to start the initiation of a pilot project. This assignment should clearly define the goal of the pilot project.

3. **Assemble a Process Steering Group**

A dedicated Steering Group should be appointed that can initiate and coordinate the process of finding a suitable pilot project. Based on the assignment by the ministry and previously delivered projects, the Steering Group should define clear goals, criteria and success factors for a pilot project.

The Steering Group should consist of individuals that are committed to experimenting with an IPD-approach and represent the various disciplines within the StMB, and should consist of at least technical representatives (experienced engineers), legal representatives, and a coach that is experienced with IPD-delivery. The coach can help guide the Steering Group through the process of initiating the pilot project.

4. Find a suitable pilot project

The Steering Group defines the necessary criteria for a pilot project and analyses various future projects on their suitability as an IPD pilot project. The Steering Group engages in discussions with project stakeholders, seeking to gain a comprehensive understanding of identified risks, project complexity, motivation of the involved stakeholders to join in a pilot project, and other factors influencing the applicability of IPD to the project. Based on these characteristics, the Steering Group proposes a pilot project.

5. Dialogue

Before deciding on a pilot project, a dialogue should be opened with the involved stakeholders and potentially interested contractors. The dialogue should be a final check whether the required success factors are in place, and the people and parties involved are all aligned on implementing an IPD-approach.

6. Decide on a project

The StMB grants approval for the start of the pilot project. The local branch will be in the lead for the pilot project, but it is crucial that the StMB (on the ministerial level) supports the local branch in the execution the pilot project. The Steering Group can provide the ministerial guidance needed by the local branch to learn how to implement an IPD-contract and acts as a sponsor for the pilot within the ministry. The Steering Committee keeps on coaching the local branch and the project team throughout the project.

3.3 Planning Phase

3.3.1 Approach to the planning phase

In the planning phase, the project team defines what to build, where it should be built, and obtains the necessary permits. As discussed in Chapter 2, involving the contractor early on can be beneficial for the project. However, during these early stages, the potential advantages of including the contractor in the planning phase must be carefully considered against the added complexities of collaboration.

Plans can change a lot during this phase, and involving the contractor too soon might mean that they will have to make many adjustments later on. Also, bringing in the contractor early could pose legal issues if not done correctly, especially in ensuring fair competition during the subsequent tendering process for project execution. Finally, contractors may hesitate to join in the planning phase due to the absence of secured permits, their inexperience with IPD-delivery and the project's still uncertain future.

Therefore, based on insights from the workshop, it was concluded that for a pilot project, involving the contractor during the planning phase is not recommended.

3.3.2 Staffing the project (client)

When staffing a project team for the IPD pilot project, several considerations should be taken into account. First and foremost, team members should possess a strong understanding of IPD principles and be open to collaborative working methods. Additionally, effective communication skills are important, given the emphasis on interdisciplinary collaboration in the pilot project. Selecting individuals with a proven track record of adaptability enhances the team's ability to navigate the complexities associated with the innovative IPD-approach.

Make use of consultants

During the workshop it was suggested to make use of consultants with experience from other (private) IPD-projects in Germany. This way the project team can gain comprehensive understanding of how to work with the IPD principles and use collaborative working methods.

3.4 Tender Phase

3.4.1 Preparation of the tender

Once the planning is completed and the permits have been requested, the project team can start preparing for the tender. Before the tender can be published a couple of things need to be in place:

- A decision on how many partners to include in the integrated project team should be made. For the pilot project we suggest to keep it simple with one general contractor involved for the delivery of the project.
- A draft contract framework needs to be in place. The contract should foster collaboration and should contain the incentives and related Key Performance Indicators for the future contractor.
- The various criteria on the basis of which the contractors should be evaluated. These are the eligibility criteria (minimum criteria that a contractor has to meet in order to participate in the tender), selection criteria (when there are more than 3 parties interested in participating in the tender, these criteria will determine which 3 are invited to participate), and award criteria. As the scope of the project is not yet clear during the tender phase, the project can't be awarded based on a lump sum.

The objective of the collaborative approach is to limit risks during construction as much as possible. Therefore, having a solid risk management plan can be part of the value criteria on which to award the contract. Depending on the project's characteristics, the tender should be awarded based on collaboration, (non-financial) value and unit prices.

3.4.2 Market Consultation

Once the project team has made up its mind on how the tender should take place, it is advisable to do a round of market consultations. By inviting potentially interested contractors to reflect on the proposed approach to the tender and the project, valuable feedback can be gained. It is recommended to use the market consultation to gain understanding of the risk appetite of potential contractors. What risks are they willing to take on, and which risks should remain the client's responsibility? By implementing the feedback in the tender approach, the project can maximise their chances of a successful tender.

Roadshow

The Swedish Trafikverket conducts the market consultation in the format of an international roadshow together with the Swedish Chamber of Commerce. During this roadshow, the project is actively marketed to the potential contractors and feedback on the proposed tender and delivery model is obtained.

3.4.3 Start of the tender

Once the final approach for the tender has been approved by the ministry, the project team can publish the tender which is followed by the selection of 3 parties with whom to conduct the tender.

As an IPD-project requires intensive collaboration between the contractor and the client, it is advisable to include several dialogue meetings with the selected contractors during the tender phase, so they can thoroughly understand what it is that the project team is looking for. These dialogue meetings can be used to exchange ideas on how an integrated project team (the 'alliance') and joint delivery model should take shape, and how the division of risks between the client and contractor should be made.

Risk allocation

During the IPD-workshop it became clear that in general, contractors focus on limiting their exposure to risks, rather than searching for opportunities for potential gains. Knowing this can help clients to tailor their proposed risk allocation accordingly, for example by implementing a cap of exposure to the contractor in case of damages.

The general risk distribution in an IPD-collaboration can be summarised as follows:

- The client bears the risks for the contract and the requirements specification;
- The alliance bears the surrounding stakeholders risks and the risks for the design up to the detailed design stage (essentially a 50-50 risk division);
- The contractor bears the risks for the execution design (how to build it), and the risks related to the actual construction of the project.

3.4.4 Team assessment

In order to award the contract to the most suitable candidate, it is recommended to include a team assessment as one of the criteria on which the contract will be awarded. Given that personal skills are challenging to gauge solely from written documentation, assessing their communication style, responsiveness to unexpected situations, and interaction with the project team through a practical case offers great insights into how future collaboration might take shape.

On top of that, a well-executed team assessment serves as the initial interaction among actual project team members, laying the groundwork for future relationships. Reflecting on the assessment outcomes also aids in identifying potential areas that require attention in the upcoming collaboration with the winning candidate.

Team assessments in tenders

There are many European public clients that make use of team assessments in their tender procedures. However, there are differences in their approaches to the assessment. The table below shows the differences in measured competences over a set of three cases from The Netherlands, The United Kingdom, and Finland.

| Sub-criteria/competencies | Case NL | Case UK | Case FIN |
|---|---------|---------|----------|
| The ability to set clear goals | X | | |
| The ability to take mutual responsibility | X | X | |
| Open communication, reflection and feedback | X | | X |
| Mutual respect and empathy | X | | |
| Flexibility in cooperation | X | | |
| The ability to take initiative and leadership | X | X | |
| Organisational skills | | | X |
| Decision-making and problem-solving skills (solution management) | | X | X |
| The ability to build and reinforce mutual trust | | X | X |
| Commitment/ability to operate in accordance with principles/targets of the alliance | | | X |
| Relationship building and stakeholder management | | X | |

3.4.5 Award

Based on the offer made by the candidates and their performance in the team assessment, the contract is awarded. This is the starting point for the collaboration on the design of the project in an alliance between the client and contractor.

3.5 Project start-up

3.5.1 Team composition

Once the project is awarded, the integrated alliance team must be staffed. There are various ways in which this can be done, depending on the specifics of the project. The governing principles should be that the alliance team is staffed 50% contractor representatives/50% client representatives, and the party that is the best equipped for a certain role in the project team should be the party that staffs that role (for example, the Technical Manager should be staffed by the contractor, cost/change control should be staffed by the client). If the need arises for a neutral leader, the Project Director role can be staffed by a consultant hired by the alliance, supported by directors from both parties. The results of the team assessment in the tender phase can be used as a basis for the staffing of the alliance team.

It is imperative that the key team members from both organisations are experienced and have the required competences to work in an alliance. It can be useful to staff the alliance team with project managers from the client that have some experience working in a commercial organisation, this helps to better understand the motivations of the contractor and grasp their more business minded approach.

The team composition of the alliance team of the Zuidasdok Tunnel Project (Rijkswaterstaat, Netherlands) is shown in figure 1 as an example. The joint alliance team is staffed by both parties, client and contractor. The main job of the alliance team is designing and optimising the project and manage the risks in the alliance domain. The Alliance Projectmanagement Team is responsible for the overall day-to-day management of the entire alliance. The Alliance Board acts as a supervisor and escalation level for the Projectmanagement Team.

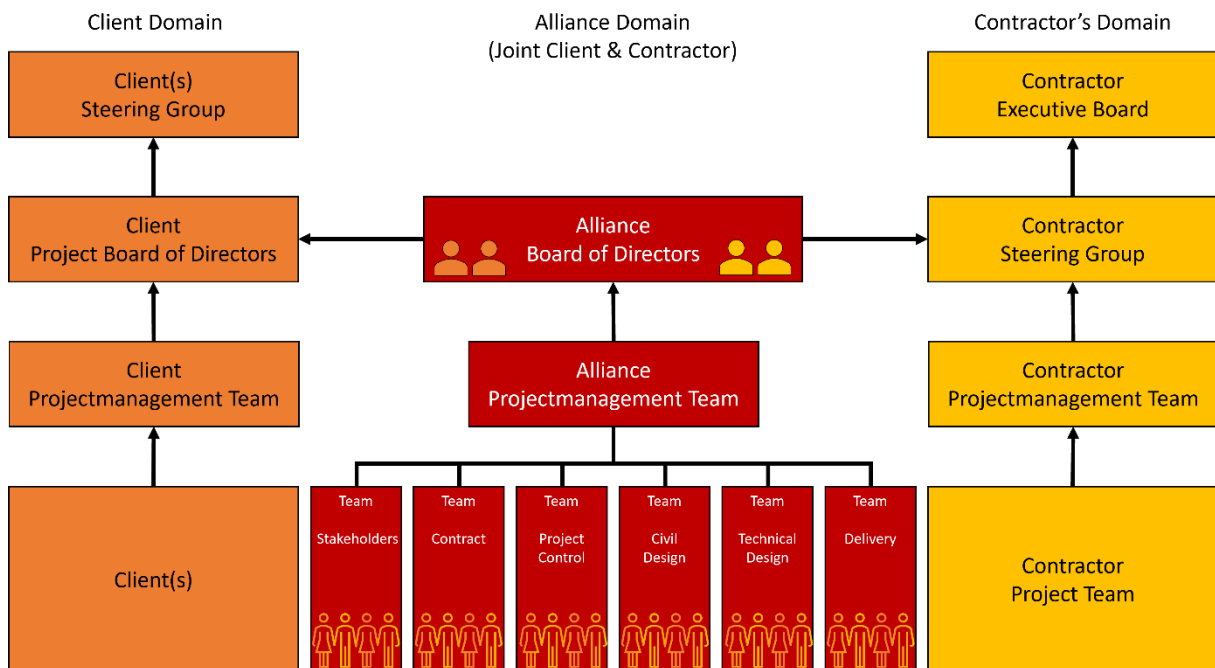


Figure 1: Staffing an alliance team, example of the Zuidasdok Tunnel Project

3.5.2 Organisational challenges

The integrated way of working, introduces a series of new organisational challenges. The alliance team is now tasked with harmonising the 'best for project' perspective with the interests of the parent organisation(s). While these interests often align, there will be instances where finding the right balance becomes a delicate exercise. The Alliance Team must decide the extent to which they identify with the alliance versus the respective parent organisation(s). For instance, should alliance members solely prioritise the 'best for project' mindset, or should they continue to advocate for the interests of their respective parent organisation(s)?

Implementing the IPD-approach goes beyond the Project Team's responsibilities. Working in an integrated way with the contractor also has an impact on the parent organisation of the project team. When it is decided to deliver a project using an IPD-approach, the only way to make it a success is if that approach is embraced and supported by the whole parent organisation. For example, in contract management, trust and open communication are now crucial for resolving issues promptly. This means that the legal department of the parent organisation should avoid making claims or sending formal letters without consulting the Alliance Team as that could jeopardise the trust and collaborative working approach.

In order to gain the support from the parent organisation as a whole, it's imperative that the high-level management presents a clear vision statement or advertisement that details the collaborative principles for the delivery of the project. This makes it clear for the whole parent organisation how the project should be governed, and forms the starting point for the way in which (legal) issues should be managed. Therefore, a successful IPD-implementation can only work if the top level management of both the client and contractor organisations are convinced of the benefits of the IPD-model and support its implementation in the pilot project.

3.6 Design Phase

Once the Alliance Team is set up, they can start with working towards the execution design. During this stage, the contractor is compensated for their work on an hourly basis. In Chapter 2, we explain how the collaborative design phase aims to increase the level of detail of the design, resulting in an optimised execution design in which risks during construction are minimised. As contractors are generally risk averse, they tend to keep refining design details until all the risks are almost gone. This can drag out the design phase. Additionally, the more detailed the design becomes, the more is known about potential risks. This can make the contractor hesitant to start with construction if there are too many risks. So, at some point, the client has to step in and accept that there will be some level of risk that will be dealt with during construction.

3.6.1 Team alignment

After the Alliance Team members have been selected and are working together, the process of team alignment starts. It is likely that the organisational culture of the contractor is different to that of the client. In order to perform as a functioning team, the Alliance Team will have to develop an organisational culture of its own. This means relationships, behaviours, attitudes and reactions should reflect the cooperative set-up of the IPD-approach. Achieving such a collaborative project culture is a continuous process, and requires an ongoing effort to align ideas and foster a sense of team spirit.

Following from the IPD-workshop, there are a couple of interventions that can be made to achieve and maintain a collaborative project culture:

1. Clear communication

Not communicating well can easily lead to misunderstandings and disputes. One way to overcome this is by being aware of the different communication styles of both organisations, and communicate by using the following four-step method:

- 1) Send the message;
- 2) Make sure that the message is understood in the way that was meant;
- 3) Verify that the message is accepted by the receiver;
- 4) Follow-up on the message.

2. Align project goals

The project goals should be clear and aligned between the Alliance Team members. If there is a different understanding of the project's success, it can lead to disputes. It is recommended to ask the Alliance Team members themselves how they define project success, and summarise the outcomes in 2-4 important goals for the project that are easy to understand.

For instance, the formulated project goal of the Söderköping Bypass project in Sweden was *"a safe execution, the right quality in the final product, and at the right cost"*.

3. Decision guidelines

Let the Alliance Team members that have the knowledge and mandate to make a decision, take that decision. After taking the effort of selecting the right partner during the tender, you will have to trust them that they are qualified to make decisions that are best for the project. A guideline can help to determine who should make which decisions. Decisions that don't affect the formulated project goal (above the water line) can be made by everyone, decisions that may affect the formulated project goal (below the water line) should be made only after sufficient information has been gathered and sufficient competence has been involved to make the decision.

4. Focus on solutions

It is common that once problems arise, team members fall back in old behaviour. The tendency is to thoroughly describe and document the problem, including identifying the cause or assigning blame, which often directs energy and attention toward the wrong aspect. Instead, team members should be guided to concentrate on finding a solution for the problem, aligning with the project's best interests. The aim should be to quickly find a sufficient solution rather than take a long time to find the perfect solution.

5. Project Charter

Write down the rules and/or project mission detailing the project culture in a 'Project Charter'. Examples range from *"we solve challenges and problems together"* to *"we have an open dialogue where it is natural to have different opinions"*. Make sure that the Alliance Team commits to the charter, establishing an institutionalised way of working together.

6. Training in collaboration

One of the cornerstones of successful collaborative projects in Finland is the training of the involved Alliance Team members. Both the client and contractor are trained by an external party to work in a collaborative mindset. By going through the development programme together, there is already a shared understanding of what collaboration entails. One of the methods to do this is the 'Lean Method' which is centred on 'respect for people'. The Lean Construction Institute helps organisations with exercises and training to encourage respect and trust amongst all team members.

7. Shared location

It helps when the people involved in the project can easily find each other to work together on the project. For that reason, the members of the Alliance Team should be located together in the same building.

Setting the stage

One common mistake in IPD projects is rushing into the design work without laying the groundwork. Experience shows that taking the time to set things up and designing a proper organisation is worthwhile. Invest time in building the Alliance Team, fostering trust, and getting to know each other not just at the project's outset but on a personal level. Understand each other's motivations and those of the parent organisations. Have open discussions about how the Alliance Team will operate, collaborate, interact with parent organisations, provide transparent operations, be open and communicate with each other. And finally, make sure that the team members are equipped with the right tools (such as aligned ICT systems) and have had the right training to work together effectively.

3.6.2 Team Coaching

Implementing team coaching is a crucial measure to ensure effective collaboration throughout a project, and it has become a standard practice in projects undertaken by Väylä (FI) and Rijkswaterstaat (NL). This approach involves an annually renewed programme featuring monthly coaching sessions facilitated by an external facilitator. In these sessions, both contractor and client team members (not just the management) are invited to engage in reflective discussions about collaboration and working methods. The outcome of this process is a heightened understanding of each other's interests, thereby fostering trust within the team. Consequently, when challenges arise, team members can navigate them more smoothly, offering mutual support during periods of uncertainty. This proactive approach to team coaching has shown to contribute significantly to the overall success of the collaborative efforts in project delivery.

3.7 Execution Phase

3.7.1 Target pricing

Once the execution design is finished, the process of setting a target price can start. This process essentially entails that financial risks (and opportunities) are shared between the client and contractor so that the contractor is motivated to carry out the works as efficiently as possible.

The process of target pricing works as follows. For each individual work package that make up the entire project, a joint calculation is made by the Alliance Team of the costs of that individual work package (this includes direct costs, indirect costs, risk allowance, and fee). It is important to make these calculations together, so there is no discussion on the costs of the work package when the target price is being set (based on risk appetite).

Open Book method

For the client to be able to control the cost calculations made by the contractor, it is necessary to gain insight in the actual costs of the contractor. This can be achieved by giving the client access to the actual financial records of the contractor (open book).

After running a risk analysis on both the time and financial risks, a probability curve can be made, predicting the likelihood of the actual costs for delivering that specific work package (see figure 2). A discussion then follows between the client and contractor where to set the target cost. Depending on how high or low the target cost is set on the risk curve, the likelihood of having and underrun (within target cost), or overrun (over target cost) changes. It is recommended to set the target cost at a robust scenario (high likelihood of actual costs within target cost).

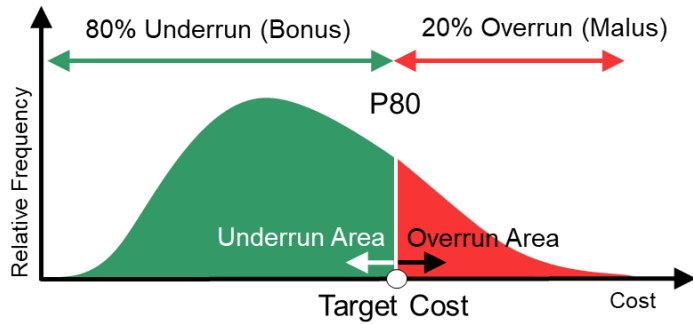


Figure 1: Example of a probability curve.

Once the target cost has been agreed, the actual construction takes place. Depending on how effective the construction is executed, the actual costs are either higher or lower than the agreed upon target cost. If it is higher, the contractor and client share the additional costs, if it is lower, the contractor and client share the saved gains (see figure 3).

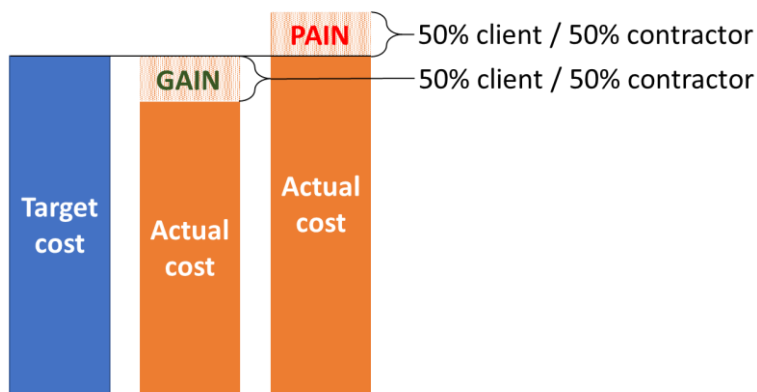


Figure 2: Target cost versus actual cost and example of sharing gain and pain

Experience has shown that having to discuss the height of the target price for each work package can be tedious. For that reason, it is recommended to only use this process in projects where risks are unclear, the scope is unclear, the project takes place in a complex environment or where the delivery time is very long (so the likelihood of changes is high).

3.7.2 Risk Management

One of the main benefits of working collaboratively with the contractor, is to limit risks during the construction phase as much as possible and have mitigation measures in place for the remaining risks. If unforeseen issues do arise during the construction phase, early warning signals should be shared as soon as possible. This allows the issue to be addressed before it turns into a significant problem. Even if the contractor hasn't agreed to the responsibility for unforeseen (black swan) risks, the contractor can often help to mitigate the impact of that risk by signalling the risk early.

Big Room

One of the best ways to manage risks is by having a regular conversation within the Alliance Team on potential risks for the project. A good way to have that conversation take place is by housing the Alliance Team members of the contractor and client in the same location. One of the examples given during the workshop was to put up a 'risk sheet' on the wall where everyone can share their concerns in an informal and low-barrier way. A digital version of this risk sheet can also be used but can be less effective.

4. Conclusions and Recommendations

4.1 Conclusions

Can StMB benefit from an IPD-approach?

Based on the information gathered during the IPD-workshop, it is very likely that StMB could benefit from implementing an IPD-approach in their projects. The characteristics of the project should be leading in the decision to implement an IPD-strategy for that project. Working together with the contractor in an alliance requires an investment from the client and takes time to set up. If the project is complex enough, has high risks involved, has a long expected timespan (so there is a high possibility of changes), or where it is still unclear what should be built, the benefits of working in an alliance can outweigh the initial investment in collaboration.

Can IPD be utilised for mid-size projects?

There are multiple examples of mid-size projects in Europe that implement an IPD-strategy for their delivery. If the StMB wants to use an IPD-approach for mid-size (€10-50mln) projects, it should carefully consider whether the needed investments in setting up the alliance and effort needed for the target price mechanism are returned by limiting risks during construction.

It is possible that the characteristics of the pilot project do not provide enough reason to implement a complete IPD-approach. In that case, the StMB could opt to leave out the target pricing mechanism and shared financial risk, but still implement collaboration enhancing mechanisms such as the team assessment, team coaching, and/or the joined housing.

How much time is needed for IPD in relation to standard delivery models?

It is difficult to determine the extent to which an IPD-approach saves or takes more time than a regular fixed price contract. The extra time needed during the design phase is strongly dependent on the characteristics of the project, and on the degree in which the Alliance Team wants to limit risks before moving to the next phase. By identifying and mitigating risks during the design phase, the construction phase is executed more efficiently (less delays, fewer claims). Depending on the characteristics of the project and the way in which the project is managed, the use of IPD can save or take more time i.r.t. a regular fixed price contract.

4.2 Critical Success Factors

During the workshop a set of critical success factors were identified. These have to be in place in order to successfully deliver an StMB pilot project using an IPD-approach:

- **Commitment of the client organisation:** The success of the IPD-approach rests on the firm commitment of the client organisation's leadership. A motivated sponsor at the ministry level is essential to propel the project forward.
- **Market readiness:** Ensure that the market is not only willing but also eager to embrace the IPD-approach. This entails a readiness to share risks and a genuine commitment to openness.
- **Transparent motivations:** Cultivate an environment where all stakeholders openly share their motivations, both on a personal and organisational level. This transparency fosters mutual understanding, helping parties consider each other's motivations and thereby reducing conflicts.
- **Opposition from small-/medium-sized businesses:** Anticipate potential resistance from small- and medium-sized businesses. Actively involve the legal department from the start to prevent any legal challenges that might arise, potentially causing delays or hindrances to the project.
- **Proactive mindset:** Embrace a proactive "Just do it!" mindset. Collaborative working is a skill developed through practical experience. Once the decision is made to adopt the IPD-approach, it's crucial to follow through, gaining hands-on experience alongside the contractor, and building a cohesive alliance team over time.

