ABSTRACT

The preparation for large infrastructure projects often consumes an extraordinary amount of time, money and human resources and is not particularly cost-effective. Some of this inefficiency is caused by traditional procurement methods which bring contractors into the process after many key decisions have been made.

The clients and consultants are asked to make design decisions with insufficient information and knowhow as to the available technology, equipment and potential innovative solutions. To address these issues and find ways in which the procurement system might be changed to involve contractors at an early point in time, a Forum on Early Contractor Involvement was held on June 23-24 2011 at the Hilton London Docklands, UK.

This article describes the discussions that took place, the perceived benefits and challenges to contractors, consultants and clients as well as the needs of each constituency. It then offers suggestions on revising the procurement system to include Early Contractor Involvement, realising that these changes are critical but require a “paradigm shift” in thinking.

INTRODUCTION

When a large infrastructure project is on the drawing board, who is most likely to have the technical knowhow to design the project in the most cost-effective manner? The client, who has determined that the project is necessary? The consultant who has been advising the client? Or the contractor who will ultimately have to construct the infrastructure project?

These questions have given rise to an honest examination into the efficiency and satisfaction offered by traditional procurement methods. Based on this assessment, the Central Dredging Association (CEDA) and International Association of Dredging Companies (IADC) determined the need for an open, interactive Forum which could provide a platform for a free exchange of ideas on the subject of procurement, rethinking conventional wisdom and making room for innovative approaches: Specifically discussing the possibilities and added value of “early contractor involvement” or ECI.

THE FORUM

As a result of the initiative of IADC and CEDA, the support of CIRIA, and the willingness of Peter Lundhus of Fehmarn Belt Ltd., Denmark, Wim Klomp of DHV, The Netherlands, Huub Lavooij, The Netherlands Ministry of Infrastructure and Environment, Hendrik Postma of Royal Boskalis Westminster and Marc Gramberger of Prospex bvba, an international expert on cooperation, an organising committee was formed to tackle the subject of Early Contractor Involvement (ECI). The date was set for June 23-24 2011 for a Forum at the Hilton London Docklands.

One of the first speakers to be recruited was Professor Dean Kashiwagi, an internationally recognised expert in optimising the delivery of construction and other services. Dr. Kashiwagi
teaches at the Del E. Webb School of Construction, Arizona State University, USA and is Coordinator of the Performance Based Studies Research Group (PBSRG). He is closely involved with the Dutch Infrastructure Agency as well as with groups in Finland, Africa and Malaysia. Peter Lundhus, Technical Director of the Fehmarnbelt project, agreed to chair the committee and to speak about his ongoing experiences in the strategy of the proposed tunnel / bridge link between Rødbyhavn, Denmark and Puttgarten, Germany.

Joining keynoteers Kashiwagi and Lundhus were four clients, each of whom presented their observations about major construction projects in their own countries: Mr Stephen Bradford, CEO of the Port of Melbourne, Australia; Mr Cees Brandsen, the General Director of the Competence Centre Infrastructure at the Netherlands Ministry of Infrastructure and Environment; Richard Nunn, Principal Engineer Flood and Coastal Risk Technical Manager, at the U.K. Environment Agency and Menno Steenman, who is presently Contract Manager for the Port of Rotterdam. Ms Daphne Broerse, a Partner at Norton Rose LLP, who addressed the legal issues of ECI, rounded off the list of speakers.

THE CASE FOR ECI
What has led to this debate about early involvement? Probably the leading reason is the very long-term, uphill efforts needed to get a mega construction project from the ground. Whilst the client, government agency or port authority for instance, has determined the necessity for a port expansion project or an environmental remediation work or other infrastructure improvement, the how of realising the proposed project is normally not considered until a later stage. By then, various struggles have emerged. According to Peter Lundhus, “Too little use is made early on of the knowledge of contractors”.

The first step is to examine the procurement system as it functions now. In Professor Kashiwagi’s estimation, “The current delivery system is broken”. He emphasises that “In the present system, project designers – who do not know how to scope and cost – come on board first. Then the contractors, who are the experts, are forced to be reactive instead of proactive. By telling the vendors what to do, taking the lowest price and negotiating it downwards, the situation worsens, prices increase and performance decreases. Experts should be engaged from the beginning”.

Trust versus Transparency
Also, “trust” is an overused word when discussing procurement. According to Kashiwagi, “Trust and rules of encouragement are not enough…. Transparency is what is needed. When there is only trust, risk goes up”. When there is transparency everyone knows what is going on and can address issues in a timely manner, reducing risk and liability. Then “trust” is not necessary anymore. The job of the contractor is to “educate the client” and “the client must learn to let go of the controls”. This, he says, requires a “paradigm shift” in the process.

Of course such a shift does not happen overnight. And when listening to the issues confronting Peter Lundhus with the Fehmarnbelt Link project, the question becomes how do you overcome the obstacles that hinder communication and cooperative, pro-active contractor contributions? For the Fehmarnbelt Link, a State Treaty between Denmark and Germany was signed in 2006 with the intention to build starting in 2008 with completion scheduled for 2020. The first issue confronting the Fehmarnbelt group was determining whether a bridge or tunnel would be the most reasonable connection between northern Germany and southern Denmark. A range of engineering and environmental factors had to be considered. The preliminary choice has now fallen on creating a tunnel, primarily for environmental considerations. But Lundhus remarks, “Not a shadow of a contractor has been seen”.

Overcoming political scepticism
“And yet if contractors were invited to have a competitive dialogue,” he continues, “we would be accused of being in the contractor’s pocket!”. For Lundhus clearly contractor expertise has been insufficiently used, but overcoming political scepticism and “getting NGOs on board” is a major threat to the project. After 10,000 pages of research, following all the Natura 2000 regulations and EIA, despite “open and transparent straight talk, and a flat, unbureaucratic organisation”, the fate of this major infrastructure link seems to rest in the hands of the politicians and environmentalists.

Mr. Lundhus asserted that “It would have been wonderfully efficient to be able to consult contractors in such an early involvement” … but because “Fehmarn is a political, bi-national framework, contractors and consultants can easily be perceived as being in a conflict of interest with competitors”.

THE DISCUSSIONS
These two keynoteers set the stage for the discussions that followed in the breakaway sessions. These discussions were aided by a facilitator, Mr Marc Gramberger, Managing Director of Prospex bvba, Belgium and author of the OECD’s official handbook, Citizens as Partners. He and his team introduced participants to the skills and basic knowledge
which reach beyond “the mediocrity of compromise”. Gramberger’s stated “goal is to reach a good conclusion for all parties, where 1 + 1 equals 3”.

Split into separate groups – Contractors, Consultants and Clients – with Prospex team members Douwe van Rees, Steven Libbrecht and Gramberger facilitating, some 75 participants were asked to address three issues: the challenges of ECI, the benefits of ECI and what each group “needs” from the other parties.

THE THREE GROUPS

In the first of two such breakaway sessions, people really spoke their minds (Figure 1). Many of the anxieties felt by consultants became clear. Clients saw the legal obstacles to utilising information and knowhow from consultants and clients. On the other hand, contractors were inclined to see how ECI could result in an improved project design, better opportunities for innovation, the avoidance of disputes and a more cost-efficient schedule, where risk and responsibility are better in balance.

From the Consultant’s Perspective

Benefits – More Knowledge Early On

Consultants shared the opinion that ECI offers significant benefits, not only for the client and the project as a whole, but also for themselves. The knowledge brought in by a contractor through ECI can be used by consultants to improve their design(s). Not only will this benefit the project, it will also improve the quality and capability (knowledge) of the consultant, which is a long-term benefit for the consultant for future projects.

The contractor’s knowledge will also assist in developing a more realistic and reliable schedule and cost estimate for the project. When working methods of the dredging contractor are known at an early stage of design, including the environmental effects of construction work methods, there may be less work to do at the EIA stage. This creates added value – especially in relation to environmental permitting. Working together as a team will allow for an improved relationship, which will ultimately lead to improved results. Misunderstandings and potential claims can be avoided.

In general, foreseeing (and managing) risks is of major importance to a consultant, and a single mistake can cause a serious loss of reliability. This vulnerability means that consultants may be hesitant towards innovative approaches. However, working together with a contractor, a thorough and realistic risk assessment can be made, so that innovative ideas can be pursued.

On the question of whether ECI will lead to more or less design/engineering studies, consultants did expect that proper implementation of ECI would lead to less design/engineering studies. Taking into account that studies are a consultant’s core business, this may be interpreted as a negative impact. However, consultants are fast to concur that being able to offer more time-effective and reliable studies will be a benefit in the long run. Furthermore, where consultants sometimes have to battle against the view that “Consultants are only trying to secure additional studies for themselves,” consultants expect that as a team, a contractor and consultant can present a more compelling argument, based on a realistic risk assessment, that additional investigations/studies should be performed.

Needs – Best for Project

On the question “what does the consultant need from the client and/or contractor to realise a successful ECI”, the consultants offered the following suggestions:

- All parties should have commitment from (or at least involvement by) higher management to allow the ECI process to develop to a “best for project” end result.
- All parties should be reasonable in understanding that everyone needs a decent
chance to make a profit. (A “best for project” reward-system will be beneficial.)
- All parties should invest the right people, capable of teamwork, capable of working to a “best for project” end result. (Working as a team means honest assessments and not passing the blame to others.)
- Contractors should be committed to sharing their knowledge early in the process. Some form of commitment from the client towards the contractor will most likely be required.
- Contractors should have proper QA/QC procedures in place that allow for feedback loops. Clients should accept that the contractor will manage QA/QC process.

From the Clients’ Perspective
Benefits – Joint Problem-solving
When the question was posed, “What are the benefits of ECI for clients?” the immediate reaction was, “Conventional procurement doesn’t work well, and therefore let’s look for better ways” (Figure 2).

Considering ECI, the clients felt that it will result in state-of-the-art knowledge being available from the contractor early on which will create better awareness and understanding of risk profiles. This will result in fewer changes during later stages. Also, the long-term commercial consequences of a project will be better understood at an earlier date so that finding mechanisms for dealing with consequences can also be found earlier. In addition, all parties will understand each other’s risks and share responsibilities and accountability. This should result in reducing expenses as well as reducing the risk of legal complications. It will provide a better possibility for forecasting project results with more certainty. It should lead to joint problem-solving, addressing unknowns in difficult environments and avoiding or addressing conflict problems more successfully.

Challenges – Competition and Trust
The question of competition loomed large and some clients felt that ECI may give problems when selecting a contractor because of the appearance of prior mutual commitments. Indeed the question arose whether ECI is always suitable, for instance, when going for government permitting. And some doubt arose about whether costs would really be reduced.

Clients also expressed concern that if a contractor is consulted prior to tendering, then accusations of a lack of competition may be a problem when the contract is awarded. This could make it difficult to get a commitment from a contractor to exchange information without a guarantee for later award of contract. In addition, lending institutions for infrastructure projects have their own approaches and restrictions.

The issue of “mutual trust” also arose and how that can be achieved between client and contractor, including the subject of confidentiality. Creating trust towards the public as well is challenging. Yet, if the ECI process can help contractors, consultants and clients to get the design right from the beginning in a transparent way, especially as regards scope, size of the risk and finances, it might ease the tensions between the public and the professionals. Another challenge clients considered is how to transfer the personal trust built up amongst “team members” to organisational trust when a project leaves the initial stage to migrate to other parts of company. But again, following Kashiwagi’s research, trust is not necessary if transparency is built into the contract and the relationships. Furthermore, in order to “go for” ECI, to create the “paradigm shift”, clients felt that a sense of urgency is needed and that getting a buy-in to the process and maintaining the project’s importance even after a change of project ownership is key.

Clearly, although clients feel traditional procurement is not working optimally, they agree that change – a paradigm shift – is not so simple. A concerted effort is needed to overcome initial system inertia to accelerate a switch to ECI. Even a change in management may be necessary. Considering all these things, the main stumbling block was still seen to be the fear of the lack of competitiveness.

Needs – Transparency
“What do the clients need from contractors and consultants?” Taking contractors first, the clients’ suggestions were pragmatic: Contractors should make realistic promises; keep an open mind towards the client’s problems; take the long-term corporate perspective; maintain good relationships; offer expertise and practical insights; try to keep prices reasonable whilst offering greater efficiency and good quality; and feel free to challenge the ideas of the client and be direct, giving straightforward answers. In a word, transparent communication is critical. Viewed from the perspective of what clients need from consultants, all of the above were mentioned plus a few specific demands: Expertise, vision, accountability, the ability to take over documentation, and the ability to implement particular aspects which may demand practical experience.

From the Contractors’ Perspective
Benefits – Trust
In a preliminary discussion, one contractor remarked, “It’s about quality” and another said, “Plain rules and boundaries are preventing ECI from happening”. The discussion raised several questions: What will really make the client happy? Does the client want to discuss everything with the contractors and consultants or is the client afraid of losing control over the project’s budget? The main question is: “Why would a contractor want to be involved early on in a project?”

Figure 2. After brainstorming a chart was drawn with the benefits of ECI for each group. Here, those for clients.
The answer is rather short, but direct: to reduce risks. ECI can build a relationship that will overcome the lack of transparency between the parties and reduce risks. Of course, contractors acknowledge that the project must be attractive in terms of their own companies and employees, but if disputes can be avoided it is to everyone’s benefit, and not in the least for contractors. Again Kashiwagi responds, “You should not be looking for trust, but for transparency. When everything is transparent, trust is a non-issue”.

**Challenges – Intellectual Property**

Contractors do acknowledge that avoiding risks is perhaps easier said than done. There are definitely hurdles otherwise obviously ECI would already be happening. For the contractors the keyword is: Regulations, not only from the EU and the public, but also the client’s regulations.

Another consideration when entering into an ECI situation, according to contractors, is how to make sure that another contractor doesn’t run off with your ideas. After all if you offer advice, is that at a price? You are not yet really hired for the project, so how can you ensure that you will be rewarded if you step in early on with successful suggestions?

**Needs – Interaction of Ideas**

“What is necessary to make ECI work, what do contractors need from consultants and clients?” The contractors feel that they are the ones that should be supplying the solution for a project and then the consultant should be brought in to challenge these solutions. In this way the opportunity for innovation is strengthened and the plans can be improved by an honest back-and-forth exchange between all parties. In fact this means that the consultants actually get a new and different role, as do the clients; they too should be challenging the plan created by the contractor. And to a certain degree clients and consultants would indeed assume different roles in the development of the project.

Contractors in general definitely see the long-term benefits outweighing the challenges. Given Dr. Kashiwagi’s enthusiastic presentation, it wasn’t odd that one of the contractors immediately said to him, “You have convinced us, but now how do we convince the client?”

### THE PLENARY SESSIONS

As the Forum entered day 2 and the conferees regrouped after a second round of breakaways, three main issues emerged: the consultant’s risk of being “dumped”; how to redefine the roles of the consultants and the contractors; and how to convince clients of the need for Early Contractor Involvement (Figure 3).

**Increased interaction between Consultants and Contractors**

For consultants “the risk of being dumped” was clearly a threat, and contractors said they also feel that pressure. The point is that the consultant and the contractor will always win if they add enough value for the client even if their roles are redefined. Adding value is the best assurance to show that you are still needed. And what is meant by “redefining the consultant’s role”? There needs to be a focus on added value for the project and the client and a demonstration that early involvement equals better assessments. The client needs to do more listening and less talking and the contractor/consultant needs to understand the client better. This will lead to a more focussed mission and better teamwork.

The observation was made that contractors and consultants need to be willing to look for human resources outside their own organisations. Transparency is needed, measured performances and buying into the team process gives this kind of added value. Everyone needs to be ready to use the right people even if they are not within your organisation. In addition, a framework should be made for ECI that gives structure and avoids chaos. It means investing in the team, educating team members and creating ownership amongst them.

ECI is a method that requires preparation, where the team can identify win-win elements, and where the business model, sharing the pain and the gain, should be reconsidered. When using ECI, the project may have to be redefined, the scope may have to change and the contractor and consultant should share resources to get the right combination.

Whilst confronting these issues, some concrete ideas developed from each of the perspectives during the plenary session. It became clear that the clients in general do believe that the ECI system will result in more economical results, and as a number one benefit, clients believe that there will be fewer lengthy, costly disputes, a positive outcome that everyone could agree upon. Consensus was also reached that by implementing ECI, improvements could be made to the project design, making innovations possible, without the risk of disputes. More intensive interaction between consultants and contractors in relation to the environmental impact assessments (EIA) could be invaluable to a project. It might become clearer earlier on that additional studies – or fewer studies – are necessary. Added input would help determine how much information consultants need in order to be sure that the contractor is going at the job with the correct equipment.

Still a key challenge and common threat is missing out competitively and redefining the role of the consultant, so that consultants are...
team players and involved in the whole process. On the other hand, contractors admittedly do not have a solution for everything, so long-term cooperation and an open mind will translate into lower prices and added value. Identifying problems together and letting go of a culture of blame will make projects run more smoothly.

**LEGAL ASPECTS AND HANDS-ON EXPERIENCE: FOUR CLIENTS SPEAK**

Of great concern to all parties considering ECI is the issue of inappropriate contractor involvement and competitiveness. And it was the role of Ms Daphne Broerse, a partner at Norton Rose LLP to elucidate the European Union law. “Of course you cannot preclude competition in any form, but you can seek advice at an early stage of a project’s development as long as the principles of transparency and equal treatment are respected,” she explained. “In addition, competition needs to be secured on the market and procure that the contracting authority gets the best quality for the lowest price”.

Broerse suggested that several EU regulations should be consulted to clarify the issues: Article VI.6 Governmental Procurement Agreement, and Recital 10 Directive 1997/52/EC and Recital 8 Directive 2004/18/EC. An important aspect is the inclusion of Key Performance Indicators (KPI) in the tendering process and “KPI are at the discretion of the contracting authority”.

Lastly, the issue of “how to convince the client of the need for ECI” was tackled. Perhaps most convincing for the advancement of the ECI concept were the presentations by four clients who have all had experience in involving contractors early on. These case studies (Port of Melbourne, Australia; Netherlands Ministry of Infrastructure and Environment; UK Environment Agency; Port of Rotterdam, the Netherlands) directly addressed the advantages of ECI and also what it takes to implement such a system: The commitment of all contracting parties; on-going communication on all levels of the companies, including senior management and the board; education of teams on all levels; and the participation of true experts from all sides.

The kind of partnering that is represented by Early Contractor Involvement is not an easy task, but the rewards are expedited projects at lower costs with less risk for all parties. Even the clients pointed out that many projects are a one-off, one of a kind enterprise and that the client is therefore inexperienced. On the other hand, consultants and contractors come to the table with broad experience on a diversity of projects and especially large and complex infrastructure projects. Perhaps all parties need to be “convinced”, educated and be open for new ways of thinking, but who is to do “the convincing”? The answer to this was seen by many to be the various industry umbrella organisations such as IADC, CEDA and CIRIA.

### CONCLUSIONS

After examining the challenges to Early Contractor Involvement, the Plenary Session reached a consensus on several clear advantages of ECI. As well, a few core requirements were considered essential in order to implement ECI successfully.

The advantages of ECI are that it can: encourage innovation, improve initial data collection, help avoid disputes, make cost and schedules more certain, anticipate risks and help manage risk better with less liability. The core requirements to implement ECI are: a commitment to ECI from the top management of the client and the contractor for the entire project, including the boards of both parties; finding the right person, a “visionary”, who is open to new contract forms and dares to take the lead; and the selection of the right project – not every project lends itself to ECI.

The Plenary Session also concluded that several fundamental or “paradigm” shifts in thinking are necessary for the implementation of Early Contractor Involvement:

- Avoid mediocre compromises. As Marc Gramberger made clear, “When you find a solution together, it should not be a compromise. In a compromise everyone gives up something and no one is satisfied. In partnering parties have the same goals in mind and a decision should give all parties added value. One plus One should equal Three”.
- The role of the consultant will change in two ways: Consultants will in one way become facilitators who are neutral and guide the process forward. They can also become technical advisors to either the client or contractor or to both.
- Rules of encouragement are not enough. Real guidelines are needed. Documents, a paper trail, including payment are essential, not for “finger pointing” but to have it utterly clear what the rules are. This allows everyone to keep track of the project because people come and go in a large project. A framework should be locked in with senior management, including the board.
- Legally clients can seek advice. As Daphne Broerse explained, “Early market/partner involvement is not precluded by EC law as long as principles of transparency and equal treatment are respected, competition is secured on the market and the procurement ensures that the contracting authority gets the best quality for the lowest price”. The client must ensure competition and a level playing field.
- The role of the umbrella organisations, such as IADC, CEDA, CIRIA and others, can be significant in promoting the idea of ECI, educating all parties and encouraging clients to look at the possibilities of partnering using the ECI method.