# TABLE OF CONTENTS

1. **Guest Editor’s Introduction** ................................................................. 1  
   Jeroen van de Rijt and Wiebe Witteveen

2. **Historical Overview of Best Value in the Netherlands** ......................... 6  
   George K. I. Ang

3. **Best Value Procurement / Performance Information Procurement System Development** ...... 12  
   Dean Kashiwagi, PhD

4. **What is Happening in Supply Chain Management?** ............................. 46  
   Sicco C. Santema, PhD

5. **Using Best Value PIPS Procurement in Europe, Need for Compromise?** ........ 56  
   Marianne van Leeuwen

6. **Is Best Value Procurement achievable within the framework of the ARW 2005?** .......... 72  
   Ramona Apostol

7. **Best Value at the Directorate-General for Public Works and Water Management in The Netherlands: A Case Study of the Procurement of Infrastructure Projects Worth $1,200M** .......... 90  
   Jeroen van de Rijt, Wiebe Witteveen, Carlita Vis, Sicco C. Santema, PhD

8. **Tender Environmental Impact Assessment Extra Discharge Capacity Afsluitdijk** ........ 102  
   Stan van Veenendaal and Wiebe Witteveen

9. **Hiring an External Advisor Hydrology at Water Board De Dommel** .............. 112  
   Bas Plehn

10. **BVP at ’s-Hertogenbosch: Buying a Retention and Settling Tank** ............... 120  
    Gard van Hulzen

11. **A Cross-Purchasing Portfolio Application of Best Value Procurement: Lessons Learned from Six Cases at Ballast Nedam** ....................................................... 128  
    Guido J.E. Koreman

12. **Individual Business Travel at Boehringer Ingelheim: A Best Value Procurement Pilot** ....................................................... 146  
    Marco van der Heijden and Jeroen van de Rijt
Guest Editor’s Introduction to the Special Issue: Best Value Procurement in the Netherlands

Jeroen van de Rijt, MSc
Scenter Management Consultants
Driebergen-Rijsenburg, The Netherlands

Wiebe Witteveen, MSc
Ministry of Infrastructure and Environment,
Rijkswaterstaat
Utrecht, The Netherlands

“The worldwide marketplace is forcing the optimization of all functions and services. There is no place for waste in today’s economy. As processes become more efficient, they need less management, control and regulation, and more leadership, vision, and value. ‘Accountability’ will become the key issue” (Kashiwagi, in “Prestatieinkoop” by Van de Rijt & Santema, 2009a).

More than 15 years ago, Dean Kashiwagi created a process called Best Value Procurement/Performance Information Procurement System (BVP/PIPS) at Arizona State University. PIPS is a procurement method that aims to select the most suitable vendor for the job and to spur this vendor on to highest performance, while reducing the client’s management and control tasks (Kashiwagi, 2009b). Kashiwagi developed the method over several years with the objective of improving the procurement and management of construction projects by reducing risk in selecting the top performer. The BVP method exists of six steps, each built around a specific “filter” which focuses on a different element to separate high from low performers. Four filters are employed to select the best vendor, while two are related to project control.

At this moment the BVP process has been used in more than 700 tests with overall spending of $2.3 billion. BVP is being used all over the US, being tested in Botswana, Finland, The Netherlands, Malaysia and many other places around the world. However, since most pilot projects have taken place in the United States, not much is known about experiences and results outside the US.

This Special Issue focuses on the application of BVP methodology in The Netherlands. After the US, the Netherlands is the country where BVP is applied on the largest scale. BVP in the Netherlands is applied in and outside construction (ship building, IT, health care), in the public sector as well as in the private sector and across numerous phases in (different) supply chains. In 2010 BVP is on its way to becoming the new way of procurement in The Netherlands, which is reason enough to publish this special issue.

The goal of this special issue is to explain the working of BVP in the context of European and Dutch legislation and to share the lessons learned from several cases in The Netherlands. In this introduction we will give a brief summary on the history of BVP in the Netherlands, after which we will describe the content of this issue.
A brief history of BVP in The Netherlands

Dean Kashiwagi and George Ang (from the Ministry of Housing) did the first introduction of BVP to major clients in The Netherlands in 2002. In 2003, employees from the Ministry of Transport as well as employees from a large construction company (Heijmans) attended the yearly Conference on Best Value Procurement in Arizona, USA. From that point on, Dutch participants regularly attended the conference.

The first BVP projects in The Netherlands started in 2005. Below a historical overview in a time line of known BVP projects that have been done in The Netherlands since the start in 2005.

Table 1

**Historical Overview of Dutch BVP Projects**

<table>
<thead>
<tr>
<th>Year</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>Radboud UMC: maintenance projects (€700K)</td>
</tr>
<tr>
<td>2008</td>
<td>Heijmans: Bitumen supply (€12M)</td>
</tr>
<tr>
<td></td>
<td>Ballast Nedam: Acoustic fencing along railway track (€300K)</td>
</tr>
<tr>
<td></td>
<td>Ballast Nedam: Metal piles (not finished)</td>
</tr>
<tr>
<td></td>
<td>IHC Merwede: Personal Protection Equipment (€500K)</td>
</tr>
<tr>
<td></td>
<td>Ballast Nedam: Decorative prefab screen along railway (postponed)</td>
</tr>
<tr>
<td></td>
<td>Heijmans: Bitumen emulsion/road surface dressing (€2M)</td>
</tr>
<tr>
<td></td>
<td>IHC Merwede: Renovation of tugboats (not finished)</td>
</tr>
<tr>
<td>2009</td>
<td>Ballast Nedam: Fuels for cars and machinery (€8M)</td>
</tr>
<tr>
<td></td>
<td>Heijmans: Gas iol supply for projects (€9M)</td>
</tr>
<tr>
<td></td>
<td>Municipality of Den Bosch: Retention settling tank (€1M)</td>
</tr>
<tr>
<td></td>
<td>Rijkswaterstaat: 16 infrastructural projects in the Fast Track Project (approx. €600M)</td>
</tr>
<tr>
<td>2010</td>
<td>Rijkswaterstaat: ESA project (€2M)</td>
</tr>
<tr>
<td></td>
<td>Water board De Dommel: Hydrology services (€300K)</td>
</tr>
<tr>
<td></td>
<td>Boehringer Ingelheim: Individual Business Travel (€375K)</td>
</tr>
<tr>
<td></td>
<td>Ballast Nedam: Prefab concrete paving stones (€3M)</td>
</tr>
<tr>
<td></td>
<td>Woningcorporation: Building seven apartments (€1M)</td>
</tr>
<tr>
<td></td>
<td>Waterbedrijf Limburg (currently running: €1M)</td>
</tr>
<tr>
<td></td>
<td>Ballast Nedam: Wholesalers for hardware and tooling (€6M)</td>
</tr>
<tr>
<td></td>
<td>Corus: inspection and renovation of sewers (€600K)</td>
</tr>
</tbody>
</table>

As the table above shows, most projects took place in the construction industry. The application of BVP in construction must be seen in the context of the dramatic changes in the last decade. Up until 2000 the construction industry had all the features of a low-bid arena: specification, qualification, standards-based (Design-Bid-Build), and management and inspection by the client. Up until 1992 consultation about prices by the vendors was even legal.

In 2002 a number of fraud cases led to the installation of the Netherlands’ parliamentary inquiry Committee of Construction Fraud. The most important recommendations of the Committee were threefold. First of all there was a need for harmonized procurement policies for public contract authorities. Secondly, public authorities should adapt their policies towards more integrated
project delivery models, such as Design-Build and Design-Build-Finance-Maintain. The third recommendation was to make more use of award criteria based on price and quality (use of so-called “Most Economically Advantageous Tender; or “MEAT”).

The Directorate-General of Public Works and Water Management (Rijkswaterstaat), part of the Ministry of Transport, Public Works and Water Management, anchored the policy of integrated contracts and the use of best value procurement in 2004 (Rijkswaterstaat, 2004). The ambition for 2012 is to award 90% of all contracts on quality and price (Rijkswaterstaat, 2008). A very specific way of awarding contracts based on quality and price is using the methodology of BVP.

A major milestone for BVP in The Netherlands was the decision in 2009 by Rijkswaterstaat to resolve 16 major road bottlenecks in the Netherlands using BVP. The so-called Fast Track Program (Programma Spoedaanpak Wegen) is the world’s largest BVP program with a combined worth of €600 million ($800 billion).

Next to projects shown in Table 1, a Dutch CIB W117 (previously TG61) platform for discussion has been established by Sicco Santema and Jeroen van de Rijt. In this platform the practitioners of BVP share experiences and learning. This platform contains not only clients and vendors from the construction industry, but also professionals from other industries. In 2009, Van de Rijt and Santema published the first non-English book on BVP, which helped to share BVP methodology in new arenas.

**Papers in this Special Issue**

This Special Issue begins with an historical overview by George Ang, the person who introduced BVP in the Netherlands. Next Dean Kashiwagi describes the BVP methodology, its origins and developments in a paper called “Case Study: Best Value Procurement/Performance Information Procurement System Development.” All papers in this journal in which cases are outlined will reflect the way they applied this methodology. Then Sicco Santema presents an overview of BVP from a supply chain perspective.

Given the importance of procurement legislation in the public sector the fourth and fifth papers deal with specific European and Dutch legislation issues. Marianne Van Leeuwen describes her view on the applicability of BVP within European Legislation, while Ramona Apostol reflects her views in the following paper on the legal issues from the perspective of Dutch national legislation.

These legally-orientated papers are followed by a case study on the world’s largest BVP program: “Best Value at Rijkswaterstaat in The Netherlands” by Jeroen Van de Rijt, Wiebe Witteveen, Carlita Vis and Sicco Santema. The paper details the ways the Directorate-General has applied the different PIPS elements and identifies 11 differences with the “pure” PIPS methodology of Dean Kashiwagi. It then describes the results of the six procurement processes. The seventh paper deals with another project also within Rijkswaterstaat. Stan van Veenendaal and Wiebe Witteveen describe how the methodology works in a different environment, in
procuring engineering services to deliver an Environmental Impact Report in a project called EDCA (Extra Discharge Capacity Afsluitdijk).

Bas Plehn then describes the application of BVP in the same sector (engineering services), but in another area of the public sector, a water board. Water boards are among the oldest forms of local government in the Netherlands, some of them having been founded in the 13th century. However, this does not imply that their procurement processes are “traditional”.

“Retention settling tank at the Municipality of Den Bosch” by Gard van Hulzen is the ninth paper in this issue. It is an example where the client (Den Bosch) is being educated from parties downstream in the value chain (Breijn, part of construction company Heijmans). This paper shows the applicability of the methodology in a municipality and is the “bridge case” between the public and private sector applying BVP.

In the next paper Guido Koreman of construction company Ballast Nedam, describes the BVP projects his company been doing since 2008 (upstream in the value chain). It is the first paper in this journal in the private sector. Building on his experiences, he designed a portfolio model and makes suggestions on implementing BVP as a procurement philosophy in an organization. The eleventh and final paper in this Special Issue is written by Marco van der Heijden from global pharmaceutical company Boehringer Ingelheim. Van der Heijden describes a pilot project where Individual Business Travel is being procured. The pilot shows that the methodology also works when procuring services outside the construction industry.

The Future

Throughout this Special Issue, one will notice the variety in projects that have been done, in both the public and private sector, in construction and outside construction, downstream and upstream in the value chain, projects with a “beginning and end” and so-called IDIQ contracts. BVP is still in a very early stage in The Netherlands. In each of the organizations the described projects only form a very small portion of the total procurement portfolio. When taking an even bigger perspective (total Dutch procurement) the BVP projects seem negligible in size. However, a movement has been started that focuses more and more on quality. There is a momentum in The Netherlands, also noticeable when looking at the number of attendees in conferences on this topic.

As you will recognize in the papers of this Special Issue, the results of the projects are not realized automatically. It requires constant education of employees inside the own organization and of the vendors, and a real effort to implement a change.

The future is bright. The verifiable results of the project will show a need for further implementation of BVP across different industries and across different product and different stages in the value chain. We will write follow-up papers as we work on additional projects and see more results.
Final Words from the Guest Editors

We would like to thank the authors and reviewers that contributed to this Special Issue. We would also like to thank the staff at PBSRG for correcting our (non-native) English grammar. We sincerely appreciate all your help. A special thank-you to Dean Kashiwagi, with whom we worked closely the last years, and who laid the foundation for this Special Issue with his methodology.

The Special issue editors:

Jeroen van de Rijt
Scenter Management Consultants
&
Wiebe Witteveen
Ministry of Infrastructure and Environment / Rijkswaterstaat

References


Introduction for the Dutch Special Issue: Historical Overview of Best Value in the Netherlands

George K. I. Ang, MArch, MSc
BPI Consult & Research
The Netherlands

Documenting the Journey of Best Value Procurement into the Netherlands

Best Value Procurement is on its way to being adopted as the backbone in professionalising public construction clients in the Netherlands. Today, apart from several private real estate investments all over the country, major public work projects representing more than US$ 1000 million investment costs, are being run by managing performance information and value. The application of the best value Performance Information Procurement System (PIPS) in several project practices is presented in this special edition of the Journal, dedicated to the Dutch developments on this field during the past 7 years. A few interesting events and developments were apparent in Dutch construction practice prior to introducing best value procurement PIPS as a vision in 2004.

As in most other countries, worldwide traditional market structures, with their emphasis on short-term relationships, were characteristic for the Dutch construction sector during the past century. However, the construction industry has been continually criticised for not achieving the level of improvement in performance and productivity shown by other industrial sectors. Structurally suffering a 10-12% investment loss by construction defects while running business with less than 4% profit margins may be considered “very weird” compared to the common economic performance of less than 4% defects and more than 12% profit margins in other industries.

Earlier, during the nineties, this has already led to an international need for reform in a number of countries, such as the Nordic countries, Australia, Hong Kong and Singapore, successfully following the well known UK vision and practice on “Constructing the Team” (Latham 1994) and “Constructing Excellence” (Egan 1998). The sense of urgency for reform in building and construction in the Netherlands was, nevertheless, not felt before the 2002 large scale fraud and collusion scandal that led to a Parliamentary Inquiry resulting in recommendations towards rigorous politically driven changes.

Evidence suggests that the traditional competitive approaches, which most countries are now moving away from, give rise to systemic problems with market dynamics in the construction sector. It is argued that these traditional competition policies, due to the characteristics of the construction industry, create a business environment that encumbers innovation and dynamic efficiency. The construction industry, in particular the public works segment, seems highly vulnerable to ruinous competition. Traditional procurement approaches make it difficult for companies to start up new business cycles. Downturns in market volume induce destructive price
wars, and exclude any form of trust, that was echoed in this collusion and fraud scandal in the Netherlands 2002.

It became politically obvious that the current and more traditional procurement and business processes do lead to abuses in the form of collusion on pricing and the allocation of work. They also inhibited competition and innovation, and so reduced progress in quality standards and productivity. There were inadequate incentives for higher performance or better value and firms were not sufficiently orientated towards their clients. The overall effect was to give the industry an increasingly poor image, which put off talented young talents from seeking employment in the building and construction industry. A method to become more efficient. With an annual turnover of approximately € 60 billion, comprised of 85,000 firms and around 526,000 employees, the sector represents more than 7% of the Dutch GNP, i.e. a major national economic asset. The previous reports and the Parliamentary Inquiry therefore set a firm basis for reform.

Due to market irregularities, and as a consequence of similar fraud and collusion scandals in a few other countries worldwide, the restoration of trust has become a major reform issue. Political commitment on this issue has been essential for the initiation of the Dutch national reform process in building and construction. Three Ministers (Trade & Industry; Transport & Civil Works; Housing, Spatial Planning and the Environment) issued a political Action Agenda in November 2003, based on five main objectives:

1. Restoring trust between the government and the sector
2. Developing effective markets and a properly functioning sector
3. Enhancing professionalism in procurement
4. Instilling high standards in the supply chain
5. Less, but more effective, regulation

An expert network for professional public procurement (PIANO: Professioneel Inkopen en Aanbesteden Netwerk Overheid opdrachtgevers) was raised as to support the implementation of these objectives. Since 2003 it became politically obvious that the same management, direction, and control would definitely not bring improvement after the 2002 scandal. Meanwhile, the best value PIPS method drew attention because it minimises the need to management and direction, and because the performance measurements, increases transparency.

However, there were a few considerations emerging from discussions among public procurement executives. The terminology used within the context of value does vary depending on the level of interests of stakeholders.

On the level of the workplace fitness for purpose is an important issue, while on the level of asset management return on investment is certainly the decisive issue, and on the level of society there may be the issue of value in terms of cultural, sustainable and architectural quality. The general approach though is based on the assumption that, in client expectations of total building performance, the quality and yearly costs of the workplace will become identified as a key to business competitiveness. In many countries programmes are ongoing with the aim for more or less radical reforms in the building and construction sector in order to “value-empower” the sector, and procurement appears to be a key factor for improvement in terms of enhancing the delivery of added value and client satisfaction.
The issue of best value procurement was explicitly addressed in autumn 2004 after the introduction of the PIPS method among public and private executives, selected by the Rijksgebouwendienst (Dutch Government Building Agency) executive George Ang, who specialized in performance based procurement. George arranged specific interactive workshop-conferences and invited the internationally well known Arizona State University Professor Dean Kashiwagi as keynote speaker.

Figure 1. Introduction of the PIPS method in August 2004 by keynote speaker Prof. Dean Kashiwagi (Arizona State University)

These conferences were followed by several similar events in both private and public organizations, such as the international Heijmans Construction Corporation, the Academic Hospital of the city of Nijmegen and the Rijkswaterstaat (the Dutch State Public, Transport and Civil Works), the Rijksgebouwendienst and Prorail (the National Railroads). In the meantime a number of procurement officers were sent to the Arizona State University to participate in the annual best value PIPS conference. The vision on best value procurement enhanced a mind set on professionalizing human resources by co-ordinated actions of 9 clients with large buying power, gathered in a Public Construction Client Forum since February 2006.
Since 2003 it became politically obvious that the same management, direction, and control would definitely not work to improve the construction industry and delivery of construction after the 2002 scandal. The best value PIPS method provides an interesting alternative in restoring trust through adequate measurement in process-related management adding to transparency. The introduction of PIPS in the Netherlands was preceded by a brief, somewhat remarkable, history.

During the 1996 CIB world congress in Tel Aviv the Rijksgebouwendienst executive George became fascinated by Dean Kashiwagi, who gave a splendid performance in an oral presentation, reduced from 20 to 5 minutes due to failing conference time management, and was introduced to Dean. Later, during the 2003 CIB Congress on Construction Management at the University of Singapore, the two met again when Dean presented in a conference theme chaired by George. Afterwards, George became attracted by the results of the PIPS method in the United States, and informally discussed the 2002 Dutch collusion problem with professor Kashiwagi. This resulted in inviting Dean as a keynote speaker in several Dutch construction management meetings. The rest is history, as visionaries in the Netherlands started testing the best value PIPS under the mentoring of Kashiwagi and his Performance Based Studies Research Group (PBSRG) at Arizona State University.

There is the decisive role of (public) procurement, both in professionalising the process as in creating an environment that enhances innovation and dynamic efficiency, moving away from traditional procurement approaches on lowest price only. Apparently large public construction clients (a few ministries) did understand. In the end, others did understand, one thing led to another, and Best Value PIPS is today garnering tremendous interest in the Netherlands. This entire journal will serve to capture the different test efforts that are completed and ongoing in the Netherlands. The Dutch are proud that the PIPS tests being conducted are the largest and most innovative in the world, and show the potential for the industry and academic research to become partners and have major impact on the way business is being done.

References


George Ang Biography

George Ang,  
Former executive at Rijksgebouwendienst (Dutch Government Building Agency)  
Current position: Director of BPI Building Process Innovation Consult & Research, the Netherlands.  
+46.525.30224 or +31.6.10888460  
ang00016@planet.nl

George K.I. Ang MArc MSc is an architect and civil engineer by profession. Having designed approximately 150.000m2 gross floor area of mainly educational facilities he was highly specialized within that field since the seventies.

During the nineties, as an executive at the Dutch Government Building Agency, he had the lead in developing and implementing performance-based procurement in a large-scale design&build programme of courthouses and tax offices all over the country. Today this method has been elaborated as one of the Dutch standards in public procurement practice.

As board member of the Dutch Reform Programme in Building and Construction George was assigned to lead an internationally well known pathfinder project “Inventory of International Reform in Building and Construction”(2004), and back in the Netherlands many national reform actions have been based on the conclusions of his report.

After retirement in 2008 George runs BPI Consult & Research, a private consultancy in building process innovation and management.
Case Study: Best Value Procurement/Performance Information Procurement System Development

Dean Kashiwagi, PhD, Fulbright Scholar, PE
Performance Based Studies Research Group, Arizona State University
Tempe, AZ, USA.

Best Value Procurement/Performance Information Procurement System (BVP/PIPS) has been developed by Dean Kashiwagi and the Performance Based Studies Research Group (PBSRG) from 1991 - 2010. BVP/PIPS is a licensed technology from Arizona State University that includes a deductive logic called Information Measurement Theory (IMT), an industry structure model which shapes the PIPS functions, and a process and structure that transfers risk and control to expert vendors. The BVP/PIPS has gone through numerous stages: the performance information centered PIPS (1994-2001); the PIPS testing phase (2001-2005); and the implementation stage (2005-2009); and the theoretical refinement and standardization of BVP/PIPS technology (2010). BVP/PIPS was introduced into the Netherlands in 2005 by a large general contractor Heijmans, the Rijkeswaterstaat, and aggressively proliferated by Scenter and others. BVP/PIPS usage in the Netherlands is modified to fit within the European procurement law. However, the main advantage of PIPS is the IMT based philosophy of minimized management, direction, and control of expert vendors.

Keywords: performance information, value based selection, performance metrics, past performance information

Introduction

Best Value Procurement/Performance Information Procurement System (BVP/PIPS) was developed and refined by Dean Kashiwagi and his staff at the Performance Based Studies Research Group (PBSRG) at Arizona State University (ASU) (Kashiwagi, 1991; Kashiwagi, 2010). Best value procurement is a process where both price and performance are considered instead of just price (CFMA’s, 2006; Chan, 2004; Egan, 1998; PBSRG, 2010; Kashiwagi, 2010). BVP/PIPS is different from other best value processes due to the following:

1. Measures and documents performance and project deviations.
2. Minimizes the client/buyer's management, direction, and control of the vendor/contractor.
3. Does not use the contract to manage, direct, and control the vendor.
4. Does not use negotiation of price.
5. Covers the supply chain delivery from the requirement stage to delivery of the service.
6. Does not require the buyer to identify what is being procured at the beginning of the procurement.
7. Requires the vendor to minimize risk that they do not control.
8. Requires the best value vendor to write the final contract and define the delivered product.
9. Vendors administer their own contract by the minimization of project cost and time deviations.
10. Forces the best value vendor to understand that they have full control of the project, and by so doing will manage and minimize the risk and project deviation that is outside of their control, even if caused by the client, or un-foreseen events in the environment.

11. Minimizes the need for technical decision making and expertise of the client's technical representatives.

12. Increases the importance of vendors to show dominant value using performance measurements of their key personnel and processes.

13. Does not require the selection committee to have technical expertise. All submittals are non-technical in nature, and technical questions are not asked or discussed until after the best value prioritization.

14. Minimizes the time and cost for vendors to prepare for the procurement process.

15. Minimizes the exchange of information and communications between the client and vendors during the selection phase.

16. Forces the client's project manager (PM) to be a quality assurance based PM, with non-technical duties.

17. Defines quality assurance as ensuring that the contractor/vendor is running their quality control/risk management system.

18. Transfers the technical risk and control to the best value vendor by using a process structure that forces the vendor to be an expert.

19. Forces the expert vendor to communicate to everyone in a simple, dominant, non-technical, language, using performance measurements that can easily be understood by a non-expert.

20. Measures the performance of the other entities in the supply chain that interface with the contractor.

BVP/PIPS has been tested over 700 times, delivering construction and other services worth over $2.3B (1994-2010.) The results of the BVP/PIPS tests have been (PBSRG, 2010; Kashiwagi, J., 2009):

1. 98% client satisfaction and no vendor caused cost deviation.
2. Minimized up to 90% of the client's risk and project management.
3. Vendors increased profits up to 100% without increasing the cost to the client.

BVP/PIPS is now being used to successfully deliver commodities, professional services, non-construction services, and Information Technology (IT) services (Sullivan, et. al., 2010; Adeyemi, et. al., 2009; Kashiwagi, J., et. al., 2009; Sullivan and Michael, 2008; Kashiwagi, et. al., 2008; Sullivan and Michael, 2008; Goodridge, et. al., 2007; Kruus, et. al., 2006; Kashiwagi and Savicky, 2004; Kashiwagi, et. al., 2003).

Problems in the Delivery of Services

The successful delivery of construction and other services has been an issue for the last 20 years (Cahill and Puybaraud, 1994; Egan, 1998; Post, 1998; Adrian, 2001; Chan, and Chan, 2004; Flores, and Chase, 2005; CFMA’s, 2006; Simonson, 2006; Lepatner, 2007). Despite technical advancements such as Building Information Management (BIM), LEAN practices, forward thinking scheduling/costing software, and design enhancements, the construction industry has
continued to have performance issues. Interestingly, the performance issues are even worse in the IT industry, which is one of the most high tech industries (Brown, 2001; Natovich, 2003; Connolly, 2006; Kappelman, et. al., 2006; Lesca and Caron, 2008; Schneider, Lane and Bruton, 2009; Al-Ahmad, Al-Fagih, et. al., 2009; Computer Weekly, 2010). Another area of service delivery, hospital services, also has performance issues, as one out of every four patients is infected by hospital personnel or unclean equipment (Grady, 2010).

The development of BVP/PIPS identified the delivery system of services as the problem and not the lack of technically qualified personnel (Meyer, Witt, Kashiwagi, J. 2010, Kashiwagi, D., 2010) Using a simple industry structure diagram (Figure 1), the following deductive observations were made:

1. Price based has lower performance because the party (client or client's representative) who knows less is giving directions to the party who is supposed to be an expert (vendor).
2. When minimum requirements (are subjectively created and requires interpretation to apply) are used in combination with low price awards, the quality will continually degrade and an adversarial relationship between the client and the vendor will be formed. The client wants low price and high value, and the vendor wants minimum performing systems.
3. When prices and quality decrease, client's management, direction, and control must increase.
4. When the client's management, direction, and control increases, performance and value will decrease, and cost will increase.

Figure 1: Construction Industry Structure (CIS)

Price based awards, which does not recognize or give credit to differences in vendor quality, value, and performance will motivate contractors to be more reactive, offer lower quality, not preplan nor utilize expertise. The price based system is nontransparent, requires more decision making which increases risk of deviations and expectations. To move from low performance to higher performance, efficiency must increase, and the following factors must be minimized: cost,
management, direction, and control from the client. The level of vendor expertise must increase. An increase in performance will only come with increased vendor accountability, preplanning, measurement of performance, and quality and risk management. The best value environment identifies the contractor as an expert, and assigns quality control and risk management to the contractor. In the best value environment, the client's representative has a nontechnical quality assurance role of ensuring that the contractor has a quality control/risk management system that is being used to minimize deviations.

The above description of the best value quadrant is a deductive argument that is dominant and utilizes common sense. The design of the BVP/PIPS structure is based on the following deductive logic:

1. Expert vendors have less risk and can deliver quality at a lower price.
2. It is impossible to control a vendor, and any attempt to do so will lead to additional transactions, decision making, increased risk and cost, and less value and quality.
3. Expert vendors have very little technical risk and the risk that they do not control is their only risk.
4. Expert vendors attempt to manage and minimize the risk that they do not control, because it maximizes their profit.
5. Expert vendors preplan, and have proactive risk management systems that manage their risk before it happens.
6. The best value is the best value for the lowest price.

The BVP/PIPS process has been refined over the last 16 years. The method of refinement has been (Kashiwagi, D., Savicky et. al., 2003; Kashiwagi, D., Sullivan, et. al., 2008; Sullivan and Michael, 2008; Sullivan and Michael, 2008; Goodridge, Sullivan, et. al., 2007; Adeyemi, Kashiwagi, D., et. al., 2009; Kashiwagi, D., 2010; Sullivan, Kashiwagi, et. al., 2010):

1. To identify an owner/buyer who wants to increase their value and decrease their risk, cost and transactions on a delivered service.
2. Use the hypothesis of the deductive logic described in the previous paragraph. The goal of the tests are to minimize client management and transactions, to help the client do more with less, measure vendor performance and cost and deviations, and identify the source of any deviations.
3. Run a procurement test, using the "latest" BVP/PIPS structure.
4. Document the source of all project deviations.
5. Analyze the test results. Identify problems that could be further minimized improvements to the PIPS structure.
6. Make the modifications in the BVP/PIPS system, and run another test.

What differentiates the research philosophy of PBSRG and the BVP/PIPS from traditional construction management research are the following factors:

1. PBSRG runs tests on PIPS. Buyers of construction and other services fund PBSRG to run the tests to deliver their required services. Over 16 years, PBSRG has run over 700 tests delivering over $2.5B of services.
2. PBSRG is using deductive logic (observations), common sense, and dominant information, instead of inductive logic (exploratory work and the heavy dependency/use of industry expert opinion).
3. The peer review for validity of research comes from dominant test results (no vendor caused deviations and client satisfaction) and continuing industry demand for the research (more interested owners/clients who want higher service performance), instead of subjective peer review of other academic researchers. If the developed concepts are wrong, and if the hypothetical proposal to minimize transactions, lower cost, and increase vendor profits is not dominantly proven, the industry will discontinue their funding of the best value PIPS research. The funding of this research is always provided by an industry partners who are at risk, who are funding the research test through their own operational budget that places the industry partner at risk if PIPS does not work.

4. PBSRG runs simultaneous basic theoretical research, prototype testing, and implementation testing, minimizing the time to see results, and having quick access to hypothesis and test results.

5. The testing is run in a synergistic method, where multiple research clients are given access to each other's results.

6. Although the system is being refined, changes are not encouraged unless there is dominant improvement to the service value or increased sustainability of the visionary’s position.

7. Value is measured in terms of customer satisfaction, project deviations, and the project management/risk management effort.

Traditional construction management academic research funding does not have access to owners/buyers who are willing to turn over their delivery of services to academic researchers. PBSRG uses the deductive and dominant logic of PIPS to convince owners/buyers to adopt the PIPS system, and to become partners in the development of the process. PBSRG and their research partners continually review the theoretical basic concepts, the unique project, and implementation and sustainability of the system.

**Major Components of the PIPS Research**

The BVP/PIPS structural development and refinement has had five major components:

1. Information Measurement Theory (IMT)  The deductive logic that defines why things can happen only one way, why they are predictable, and how that can be used to predict the capability of experts. Major components of IMT include the concepts of the explanation of variation, chance, randomness, management vs. leadership, influence, control, and the issue of nature vs. nurture.

2. Kashiwagi Solution Model (KSM.)  The KSM is a part of IMT, but because it is plays such a major part of PIPS, it is being highlighted as a major component. The KSM is a deductive representation of the extreme opposite of a "Type A" or visionary person and a "Type C" or management based person. The deductive extremes are “dominant” observations (simple and easy to observe, which minimizes the need for different individuals to make decisions). Based on the results of KSM analysis, the following concepts were developed: experts are able to simplify seemingly complex technical issues and processes by using simple, non-technical explanations, and use dominant information which is easily understood by other less expert people. This led to minimized need of client/buyer decision making, and minimized flow of information.
3. Construction Industry Structure (CIS) Analysis (Figure 1). The CIS explanation of why PIPS has dominant value, and why the majority of project/risk management concepts are not accurate or efficient.

4. Performance Information Procurement System (PIPS). The actual delivery structure for optimization of the supply chain and the alignment of resources to minimize management, direction and control, and increase accountability, transparency, and value.

5. Performance Information Risk Management System (PIRMS). When the selection/award phase of PIPS is not used, and only the last risk management phase is utilized, the system is called PIRMS. It includes the weekly risk report (WRR), the risk management plan (RMP), and the Director’s Report (DR) which integrates and simplifies multiple project risk information into a dominant risk report.

The IMT concepts have changed the least. From its inception, the concepts have maintained their essence. PBSRG is continually researching potential flaws in the IMT by looking at current events and analyzing them for inconsistency with IMT. This includes the areas of genetics, psychology and psychiatry, political systems including results of war, penal systems, and attempts to control the behavior of people, and dominant performers in their respective areas.

The major IMT concepts that form the underlying structure of PIPS include:

1. Everything is predictable given all information.
2. All events happen only one way, have only one outcome, and can be predicted if someone has all the information on the initial conditions or start of the event.
3. The concept that one individual or party can influence, control, or change another individual or entity has not been dominantly proven, and the attempt to use influence or control results in transactions, unmet expectations, actions that are not timely and are not logical, and usually result in higher time and cost deviations.
4. Experts can predict the future outcome, explain it very simply, preplan the project to minimize technical and non-technical risk that they do not control, minimize cost and optimizing profit by efficiently doing the process.

IMT concepts have been tested by the author for the past 37 years in his personal life and in the leading of his family, which included his wife and eight children. IMT was first extensively tested out in the Kashiwagi family before it was implemented in the BVP/PIPS process. The KSM model were created to teach the eight children consistency, and to make it simple and clear for the Kashiwagi children to understand reality, even if they had minimal experiences to draw from. It was to provide a "dominant" platform that they could use successfully with a limited amount of information and decision making.

The construction industry structure (CIS) was first created in 1991, as a part of the author's PhD dissertation (Kashiwagi, 1991). There have been three major additions/changes to the understanding of the CIS:

1. Understanding that the CIS applied to all industries (2007.)
2. Merging of the Kashiwagi Solution Model (KSM) concept to the CIS (2008/2009) to make the teaching of BVP/PIPS quicker.
3. Changing of the "competition" horizontal axis label to "perceived competition" (2010).
In 2007, ASU utilized PBSRG and PIPS to deliver their ten year $400M food services contract. It then ran in succession the delivery of their sports marketing contract and their IT networking services. The financial difference between the traditional delivery and optimizing the supply chain was $100M over a ten year period.

As the food services and the IT networking services were being delivered at ASU, the characteristics of the CIS were clearly seen in the operations of the services. It was immediately identified that the services had been incubated in the price based environment for so long, that their organizations had the same price based characteristics and bureaucracy as the construction contractors. Every service had to overcome an absence of meaningful performance measurements, develop a risk management system which measured time and cost deviations, minimize the use of relationships to resolve issues, and minimize the normal transactions of a non-transparent, bureaucratic environment.

In 2010, a seemingly innocuous change was made to the CIS. The horizontal axis showing "competition" from low to high was changed to "perceived competition." The diagram (Figure 1) showed equal competition in both the price based and best value environments. Using observations of the price based environment, it was dominantly perceived by the authors that the low price competitors did not increase the competition to provide greater value. In the low bid environment, general contractors received subcontractor bids up to the very last moment. General contractors never know until after the award, if their bid could actually do the project for the submitted price. The objective of all contractors was to be the low price, regardless of the actual scope of the work. Deductively, there is much more competition in a best value environment where the competition is among more competitive alternatives who all understand before the proposals are submitted that they can do the project for the submitted price. In a price based environment, the low bidder's price may be the only similarity between the high performer and the low performer. In essence, without transparency, a low bidding contractor, regardless of quality, can “seem competitive” in the price based environment, where price is the only differentiator. The horizontal axis label was changed to "perceived competition" because the price based owners perceived they were getting a high level of competition. In essence, the price based owner is motivating the vendors to collude, which is the opposite of competition.

The BVP/PIPS system is the application of IMT, KSM, and Industry Structure on the delivery of services. It was first designed in 1992 and constantly refined based on the results of the testing and understanding of the philosophy and thinking of the research clients. It has gone through the following major phases:

2. The PIPS testing phase (2001-2005)
3. The implementation stage (2005-2009)
4. The theoretical refinement and standardization of BVP/PIPS technology (2010)

In each phase, major lessons were learned, resulting in modifications to the PIPS structure. The major objectives of the BVP/PIPS system remained constant:

1. Minimize transactions and cost and maximize efficiency value.
2. Transfer risk and control to experts (who have no risk.)
3. Increase the performance, profit, and quality of expert vendors by use of best value PIPS (preplan, use experts, manage and minimize the risk that the vendor does not control, and manage and minimize deviations).

**Performance Information Centered PIPS (1994-1999)**

The initial PIPS was tested on the acquisition of facility systems (roofing, painting, flooring, janitorial and landscaping service, etc., or a combination of systems). Most of the tests were delivering retrofit or replacement roofing systems. The major clients were private companies in the Phoenix Metropolitan area (Intel, Motorola, IBM, Honeywell, McDonnell Douglas, and International Rectifier) the State of Hawaii, the University of Hawaii, and the State of Hawaii Department of Transportation, the State of Utah, United Airlines in San Francisco, and the Federal Aviation Administration (FAA). A few large projects were delivered for the State of Utah, but the PIPS system was not as well developed at that time to handle the larger projects. The researchers depended much more on the IMT/KSM concepts to set an environment of expected performance and value.

During this period, the PIPS system concentrated on past performance and used a multi-criteria decision making tool called the Displaced Ideal Model (DIM) to prioritize the best value vendor (Zeleny, 1984). The major effort was to differentiate between high performers and low performers using past performance information. The past performance information was:

1. Defined for every different technical entity.
2. Approximately 50 different performance areas.
3. Required from 25 to 50 references on each vendor, plus additional references on the key individual.
4. Collected by the client or PBSRG from submitted reference lists provided by the vendors.

The majority of effort in running PIPS at this time went into data collection (75% of all expended man hours). The explanation of the DIM also took a substantial amount of time. The construction industry (designs and contractors) had never measured their performance in terms of customer satisfaction, performance, and service periods. A risk assessment value added (RAVA) submittal and an interview of key personnel was also rated, however, the rating system and documents was not well defined. The pre-award period was also not well defined or adhered to. It was mainly used by the contractors to form a relationship with the client to iron out any misunderstandings of their proposal.

The industry viewed the best value PIPS system as a method which held vendors accountable through past performance measurements and prioritization through the Displaced Ideal Model (DIM). Their lack of comfort with both of these mechanisms identified the political risk to the BVP/PIPS system. The political resistance in the public sector was fierce due to public law allowing lower performing vendors to protests for almost any reason. Low performers questioned the issue of fairness of award using performance information and their perception of the selection committee's subjective decision making (Hawaii court case.) This problem is phased out later with the use of "dominant" rating system.
The success of PIPS in the early stages of testing was based on:

1. The high performing vendors desire to change the delivery of construction from a price based, minimum standard system, to a system where performance and value made a difference.
2. The commitment of the owners/buyers who knew that the old system was broken, and wanted to change the paradigm.
3. The prequalification of the vendors by past performance information and creating an environment that if the contractor did not perform, it would be difficult to get future work.

The drawbacks of the system in the early stages included:

1. The inordinate amount of time spent collecting, compiling, and analyzing performance information.
2. As the amount of information collected increased, the amount of confusion and questioning also increased.
3. The difficulty of the industry understanding the MCDM DIM and the theory of the value of information. Contractors in both the states of Hawaii and Utah challenged the use of the DIM. They saw it as a black box that they had no way to challenge awards.
4. The political pressure put on the system by low performing vendors who previously through marketing and relationships received a large percentage of the government projects, and now were not receiving work or identified as a relatively lower performer.

The authors realized during this period that the greatest risk to the PIPS system was political risk. In both the State of Utah and the State of Hawaii, the PIPS system became political issues. Once the issue became political, the political system exponentially increased the complexity of the information. Both states discontinued the use of PIPS due to the difficulty in maintaining and explaining an updated performance information system and the MCDM DIM, and the change of paradigm. To improve the system, the following changes were made in BVP/PIPS:

1. A linear matrix which used multiplication, division (normalization), and addition replaced the MCDM DIM as the prioritization tool. Total number of points could also be used. As seen in both Hawaii and Utah, multi-criteria decision making tools (DIM, AHP, and ANP) have very little probability of success cannot be used in sustained procurement of services. They are too complicated and will not be able to withstand the political pressures of actual procurement. Until proven otherwise in actual case studies, MCDM tools in procurement belong in the academic arena and cannot be used in procurement processes.
2. An analysis was performed on the performance information, and it was determined that only eight criteria were instrumental in the outcome of the selection. The performance information was minimized from over 50 to the eight criteria, and the practice of having different surveys for different services also ended (Kashiwagi, D.T., Savicky, J. et. al., 2003).
3. The system was also redefined to make the performance information the least important criteria in the selection, and to make the interview and the RAVA the most important (Kashiwagi, 2010).
In subsequent periods of development, the responsibility of updating performance information was given to the vendors. It is the vendors who should know who are their best performers, and send their best performers to the clients who run BVP/PIPS. If vendors kept performance information on their project managers and subcontractors, the transparency of the system would identify and align performance based teams, increase efficiency, accountability, and performance.

**PIPS Testing Phase (1999-2005)**

From 1999 -2005, PBSRG worked with owners who were interested in testing PIPS to identify the source of problems in their delivery system, but not necessarily implementing the paradigm change or PIPS into their delivery process. Clients included the State of Georgia, Schering Plough, Entergy, State of Arizona Parks, Raytheon, New York Port Authority, the Federal Aviation Administration (FAA) and General Dynamics. Many of these buyers of construction services (who partnered as research clients with PBSRG) wanted projects with no deviations and high performance, but were not willing to minimize subjective decision making, direction and control, and management. These clients by running tests, provided case studies that validated the IMT/KSM, that the client and their bureaucratic actions were the main source of deviations.

**State of Utah**

The State of Utah visionary Rich Byfield, the Director of Facility/Construction Management, ran five projects totaling $180M (Kashiwagi, 2010). These projects were the first large projects delivered using PIPS. Up this time only systems, maintenance and repair, and renovation projects were delivered using PIPS. It included the dormitory construction for the 2002 Winter Olympics, a large Physical Education facility at the University of Southern Utah, an educational facility addition at Draper, Utah, and a number of correctional facilities. The major deviation from BVP/PIPS in the Utah projects was the pre-award period was not used. Also at that time, the concept of transferring risk and control to the vendor using the WRR and RMP was not well developed. However, the projects were on time, on budget, and had 98% customer satisfaction. Rich Byfield, realized that without BVP/PIPS, the projects would never have been delivered on time. (Kashiwagi and Byfield, 2002; Byfield and Kashiwagi, 2002; Kashiwagi and Byfield, 2001).

Despite the very successful results, not all vendors, designers, and state personnel were happy. BVP/PIPS was non-biased, fully competitive, and required expert vendor project managers and site superintendents. Many of the more well established contractors who normally did the construction work were upset that other contractors were awarded projects. They wanted more government decision making into the process. Before the test PIPS projects were completed, these contractors worked with the State Building Board to change the BVP/PIPS system to a "Value Based Procurement" which used more subjectivity, stopped the practice of having “blind” ratings, and rely more on the relationship between the state personnel and the contractors (Kashiwagi and Byfield, 2002; Byfield and Kashiwagi, 2002; Kashiwagi and Byfield, 2001). Over the next ten years, the State of Utah drifted back into a less competitive, relationship based
procurement. Recently, when given the updated presentation on PIPS, the procurement director of the State of Utah bemoaned, “The State of Utah took best value to a lower level, while others have refined PIPS to a higher level (Beers, 2010).”

**State of Georgia**

The state of Georgia ran two PIPS tests in 1999. Two projects estimated at $65M were delivered at $75M. In both cases, the projects came in over budget, and PIPS was blamed for increasing costs due to high performance. In one case, the delivering of a $45M wet laboratory system, received bids for $52M, $54M, and $56M. The PIPS system was blamed for inflating costs, and the project was delivered using low price. However, after analyzing the contractors' proposals, it was identified by the State that the architect was at least $5M off, and the project was overdesigned. After minimizing the scope by over $5M, the state used the low bid award system to award to the contractor. Even after de-scoping the project ($4.5M scope removed), the project was still $1M over, and the general contractor charged the state another $2M in change orders, and took over two years more to finish the fast track project. The irony is that the low bid contractor could not commission the complicated mechanical systems for the wet laboratory facility. As a result, the state fired the general contractor, and hired a specialty mechanical contractor to come in and commission the mechanical systems so that the building would serve its intended purpose.

The State of Georgia projects resulted in the following lessons learned:
1. Best value, expert contractors do not cost more than low bid awarded contractors.
2. Low bid contractors do not deliver value.
3. Architects do not scope and cost projects well.
4. Best value PIPS provides transparency and high performance.

**Schering Plough (SP)**

Schering Plough discovered PBSRG and PIPS in 2004. They used PIPS to procure facility services (laundry, landscaping, and scales and measurements). They discovered the following:
1. Larger, and more established services did not necessarily increase value and reduce cost.
2. Higher costing services did not always offer higher value.
3. Directing vendors on what to do, made vendors more reactive, and minimized their level of service.

In Table 1 & 2 it shows Schering Plough reduced their cost of 11 major services by 50%, while increasing the value of those services. A major stumbling block within SP was the inability of procurement to change the "leverage low price concept" with the "alignment of best value" principle (Kashiwagi, 2010).
Table 1

SP Project Savings Analysis

<table>
<thead>
<tr>
<th>Service</th>
<th>Annual Savings</th>
<th>Monthly Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottle Watered</td>
<td>$48,000</td>
<td>$4,000</td>
</tr>
<tr>
<td>Calibration Admin Support</td>
<td>$160,000</td>
<td>$13,333</td>
</tr>
<tr>
<td>Calibration Services</td>
<td>$1,404,000</td>
<td>$117,000</td>
</tr>
<tr>
<td>Calibration Transition Support</td>
<td>$160,000</td>
<td>$13,333</td>
</tr>
<tr>
<td>Elevators</td>
<td>$277,000</td>
<td>$23,083</td>
</tr>
<tr>
<td>Laundry Services</td>
<td>$792,000</td>
<td>$63,000</td>
</tr>
<tr>
<td>Overhead Door Services</td>
<td>$17,000</td>
<td>$1,417</td>
</tr>
<tr>
<td>Pest Control</td>
<td>$19,000</td>
<td>$1,583</td>
</tr>
<tr>
<td>Insulation Services</td>
<td>$133,000</td>
<td>$11,083</td>
</tr>
<tr>
<td>Plant Water Treatment</td>
<td>$22,449</td>
<td>$1,871</td>
</tr>
<tr>
<td>Scales &amp; Balances</td>
<td>$225,000</td>
<td>$18,750</td>
</tr>
<tr>
<td>Storeroom Management</td>
<td>$30,000</td>
<td>$2,500</td>
</tr>
<tr>
<td>Sterilizers/lab Washers</td>
<td>$10,100</td>
<td>$842</td>
</tr>
<tr>
<td>Table Top Water systems</td>
<td>$68,354</td>
<td>$5,696</td>
</tr>
<tr>
<td>Total:</td>
<td>$3,437,903</td>
<td>$286,492</td>
</tr>
</tbody>
</table>

Table 2

Best Value Comparison to Traditional System Satisfaction Rating

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Satisfaction of PIPS process</td>
<td>8</td>
</tr>
<tr>
<td>Traditional Process Client Satisfaction</td>
<td>5</td>
</tr>
<tr>
<td>Average Customer Satisfaction of Outsourced Services</td>
<td>9</td>
</tr>
</tbody>
</table>

*On a scale from 1-10 (10 being satisfied and 1 being unsatisfied)
Entergy

Entergy was interested in how PIPS could assist project management, minimizing construction cost and time deviations, and using previously blacklisted, low cost contractors. Entergy ran five projects with the following results (Kashiwagi, 2010):

1. Projects could be run successfully with the weekly risk report (WRR)/risk management plan (RMP) with a project manager tracking the projects remotely from Arizona State University (ASU.).
2. Higher performing contractors were faster and cheaper than some of their longtime contractors.
3. High performance contractors were in their local area.
4. Higher performance contractors minimized cost by up to 50% on two of the test projects.
5. Previously blackballed contractor was allowed to compete, won the selection based on a very low price, and did a perfect job in the new BVP/PIPS environment. When shifted back to a more traditional managed environment, the same contractor could not deliver, and Entergy was forced to pay another contractor to do the unfinished work.
6. On all successful BVP/PIPS projects the construction managers were not present during the projects.

Overall analysis of projects (After 9 months) (Kashiwagi, 2010):

1. Total # of projects (Procured/Awarded): 6
2. # of times Best Value was lowest price: 83%
3. Total # of projects completed: 2
   a. 100% Satisfaction
   b. 0% Change order rate
   c. 0% Delay rate

Although the test program with Entergy lasted only a year and dealt with modification and repair projects, the test results were significant. Entergy learned that the PIPS system had the potential to successfully replace the management, direction, and control of their project managers, deliver successful construction at much lower costs in an area which was "perceived" as lacking performing contractors in a time of high demand (Katrina hurricane damaged area), and take a "confirmed" poor performing contractor and have the PIPS structure assist the contractor to become a best value contractor, delivering high quality at a low cost (Kashiwagi, 2010). These results did make some of the Entergy and project management personnel nervous as the PIPS results ran counter to the project managers claims that the contractors were to blame for previous project deviations.
Table 3

**Entergy Facility Management Group Results (2007)**

<table>
<thead>
<tr>
<th>NO</th>
<th>CRITERIA</th>
<th>UNIT</th>
<th>Previous Process Ratings</th>
<th>Best Value Process Ratings</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Measures risk before the project begins</td>
<td>(1-10)</td>
<td>3.9</td>
<td>7.9</td>
<td>4.0</td>
</tr>
<tr>
<td>2</td>
<td>Process selects a performing contractor</td>
<td>(1-10)</td>
<td>5.4</td>
<td>8.3</td>
<td>2.9</td>
</tr>
<tr>
<td>3</td>
<td>The amount of time spent doing administrative duties for a project</td>
<td>%</td>
<td>27.50%</td>
<td>29.83%</td>
<td>2.33%</td>
</tr>
<tr>
<td>4</td>
<td>Documents project performance (amount of risk, cost, schedule, etc.)</td>
<td>(1-10)</td>
<td>4.7</td>
<td>8.2</td>
<td>3.5</td>
</tr>
<tr>
<td>5</td>
<td>Minimizes need to manage contractor</td>
<td>(1-10)</td>
<td>5.0</td>
<td>7.4</td>
<td>2.4</td>
</tr>
<tr>
<td>6</td>
<td>The amount of pre-planning, risk minimizing, and value added by the vendor, before contract award</td>
<td>(1-10)</td>
<td>4.3</td>
<td>8.1</td>
<td>3.8</td>
</tr>
<tr>
<td>7</td>
<td>Requires contractor to minimize risk that they do not control</td>
<td>(1-10)</td>
<td>3.6</td>
<td>8.1</td>
<td>4.5</td>
</tr>
<tr>
<td>8</td>
<td>The amount of time required to supervise the contractor</td>
<td>%</td>
<td>48%</td>
<td>31%</td>
<td>-17.0%</td>
</tr>
<tr>
<td>9</td>
<td>The amount of decision making that is needed on a project</td>
<td>(1-10)</td>
<td>7.9</td>
<td>4.4</td>
<td>-3.4</td>
</tr>
<tr>
<td>10</td>
<td>Selects contractor that provides most value to Entergy</td>
<td>(1-10)</td>
<td>4.8</td>
<td>8.7</td>
<td>3.9</td>
</tr>
<tr>
<td>11</td>
<td>The process documents performance measurements, which create accountability for all parties involved.</td>
<td>(1-10)</td>
<td>4.9</td>
<td>8.4</td>
<td>3.5</td>
</tr>
<tr>
<td>12</td>
<td>Requires a schedule at the beginning of projects, assigning accountability.</td>
<td>(1-10)</td>
<td>6.2</td>
<td>8.6</td>
<td>2.4</td>
</tr>
</tbody>
</table>

**Projects in the State of Arizona**

The Arizona Parks State Parks ran PIPS on projects to modify, refurbish, and upgrade state historical sites/facilities. A significant lesson learned happened in one of the projects where the client's negotiating representatives rejected the best value submitter because the vendor would not arbitrarily reduce their price. When notified that the state's budget did not cover their proposal, the vendor proposed to:

1. Minimize some of their scope.
2. Use a less qualified site superintendent/project manager who was closer to their site.
The state representatives attempted to force the vendor to reduce their price, and the vendor refused. The state representatives, acknowledged that they were the best value, but believed they could get more from the next best value vendor. This was highly discouraged by the PBSRG best value team. The State rejected the best value contractor and it went to the second best value. The State ended up paying more for the second prioritized vendor for less construction services. After completion of the project, the state representative said that they would not repeat the mistake.

Raytheon is a defense contractor with a large facility site in Tucson, AZ. They wanted to build a state of the art, food services cafeteria for $3M. They contracted with PBSRG to assist in implementing BVP/PIPS to deliver a fully designed cafeteria. The process narrowed the number of contractors to two, and both contractors identified that the budget was far exceeded by the requirements. As a part of the BVP/PIPS process, the contractors brought in their cost estimators, and using dominant, verifiable cost information, they established a baseline cost for the facility structure. They then proceeded to identify the largest costing items that caused the project cost to be exceeded by over 100%. The BV vendor identified all major sources of price deviation and proposed to the client that they could:

1. Reduce the scope and still have a functional cafeteria.
2. Build the facility shell, and later come in and build the facility out.

The client refused. Instead they minimized the scope, and attempted to use a low bid award instead of BVP PIPS. Upon finding that they were still way over their $3M budget, they decided to just build the shell and install hardscape/landscape. They went low bid, and hired a lower costing contractor. At the end of the project, the cost of the low bid contractor was more than the best value contractor’s price proposed a year earlier. The client had more transactions and cost and time deviations.

Lessons learned:
1. Architects are not good at scoping and cost estimating.
2. A win/lose environment where the client wins and the vendors lose is inaccurate view of reality.
3. Low bid pricing and construction management cannot deliver construction at a lower cost than high performers who know what they are doing.

**Baptist Health South Florida in Miami, Florida**

Baptist Health South Florida (BHSF) asked two main questions. First, could BVP/PIPS work in the complicated, highly technical, and highly political health care arena, and secondly, could contractors in South Florida, who are not the most sophisticated, work the WRR and RMP to successfully deliver construction work in their organization. Two small renovation test projects were conducted. In both cases the projects were on time, and on budget, with no contractor generated deviations. In both cases the only source of deviation was the designers and the hospital project managers. The contractors were meticulous in documenting the sources of deviation and how to minimize the deviations.
The PBSRG project manager was called in numerous times to explain how to resolve perceived contractor issues. In each case, the contractors clearly documented how the BHSF PM had made decisions, attempted to direct the contractor, and in every case, ended up causing confusion and time and cost deviations. At the conclusion of the second project, it was dominantly documented that the weak link of the BHSF construction delivery process was the designers and the BHSF’s own project managers. It was also identified that the two contractors who did the projects were the most expert in using the WRR and RMP tools in the testing of PIPS. However, the manager of BHSF could not fit the very efficient and effective BVP/PIPS process into their BHSF environment. It was the lack of understanding of the BHSF project management personnel that stopped the BHSF testing.

Federal Aviation Administration (FAA)

The FAA attempted to establish BVP PIPS twice: the first time in 1996-98 to deliver storm damage repair renovations within the year of project awards, and the second time in 2003-2005 to deliver larger projects. The first test was successful due to visionary project management, but unsuccessful due to bureaucratic procurement personnel. The FAA Western Region used BVP/PIPS to do modification and repair work to storm damaged aircraft towers, FAA buildings, and roads to FAA sites in mountainous areas. The minimization of direction and control over vendors, resulted in vendors using their expertise to upgrade the damaged FAA facilities. Over a three year period of time, the FAA Western Region was able to obligate all funded work and had 100% customer satisfaction. Normal delivery was only 30% of funded repairs, and many of the repairs were substandard. The FAA operational personnel were very happy with the results and getting their damaged facilities repaired. However, the procurement personnel stopped the BVP/PIPS process because their workload increased (by 300%). Instead of changing some of their bureaucratic practices and helping the operational personnel, they refused to change their paradigm and stopped all use of BVP PIPS. One of the practices which was identified as not needed, was the procurement officers wanted to be on every site for every meeting. With sites in Hawaii, Guam, and all over California, they proposed that they needed more administrative help, and when they did not get any help, they stopped the support of the BVP/PIPS. Interestingly, the number of contractor driven change orders almost completely disappeared with the use of BVP PIPS.

The FAA came back to PBSRG/ASU four years later, and tried to implement BVP/PIPS again, this time on larger construction projects (2003-2005). However, due to the loss of the visionary at the head of construction, the bureaucracy and traditional FAA project management tried to dictate the running of BVP PIPS. The FAA project manager stopped the program three years later, frustrated with the inability to overcome the FAA bureaucracy. Lessons learned from testing the BVP/PIPS process during this period:

1. The major cause of project deviation was the client, the client’s designers, and inaccurate expectations.
2. The owner’s bureaucracy, owner’s project management, direction, and control of contractors is the major cause of project deviation and failure.
3. The BVP/PIPS system is robust, and can override the client’s bureaucracy, but is not sustainable over time without a core group of “visionary “personnel who are highly trained and who have control over the project.
4. Owner visionaries in leadership positions and in operational positions is required for sustainability of best value PIPS in a bureaucratic organization.

5. BVP/PIPS is a bottoms up process and not top down. Without visionaries at the top and the project management level, and with the support of procurement, the system is not sustainable.

6. High performance vendors minimize risk, not the owner's procurement or project management personnel. The paradigm shift is that the high performance vendor will manage and minimize the risk that they do not control, thus helping the client to be accountable and successful.

7. The risk management plan and the weekly risk report are the mechanism of the contractor that brings transparency and accountability to the owner. It also helps “blind” vendors preplan and be successful. The risk management capability is shifted from people to a PIPS structure.

8. PBSRG has conducted testing in every major part of the country, and have not found a location which does not have best value contractors. In the case of "perceived" poor performance, the PIPS system has the capability to help the poor performer perform.

9. There is need to minimize the transactions in educating clients and vendors. The education seems to have minimal impact on the clients as they move through the process. This requires a PBSRG expert to ensure that the process is being followed. As more and more owners learn about PIPS, better documentation is required.

10. The management of the performance data of vendors continues to be a cumbersome task, a major cost, and a major source of risk to the owner. This part of the BVP/PIPS is the least important in selection, and takes up inordinate time for clients tracking the performance information of vendors. Regardless of how simple the task, it is an area that due to the complexity of capturing, using, and maintaining the information creates a major transaction. The use of performance information must be simple, effective, and motivate contractors to measure their own key personnel, projects, and subcontractors. The use of performance information must be made simpler, and contractors must be required to keep and use the performance information.

**PIPS Development 2005-2009**

In the previous testing period, dominant documentation showed that:

1. The client's organization and technical/procurement personnel was the number one source of risk to project success. The "perceived" risk caused by best value contractors by client's personnel is not justified. The reactive transactions are wasteful, and become detrimental to the project performance.

2. The largest source of project deviations were caused by the owner/buyer's management, direction and control (technical expertise, decision making, and attempted control of the contractor.) The greatest obstacle to the successful implementation of PIPS was the owner/buyer's organization, culture, and technical experts. The authors recommend disabling the expertise.

3. The identification of visionaries within the owner's organization who were willing to change the paradigm and use logic and common sense is the greatest requirement to successfully implement and sustain PIPS.
There were three major challenges in doing this:

1. IMT expertise and people experience. The requirement of the PBSRG staff was shifted from running a simple PIPS structure/process to being a leader who could identify visionaries; identify their level of understanding of Information Measurement Theory (IMT), and developing the visionaries to become efficient and effective in utilizing IMT principles. This is far more difficult than running a simplistic PIPS process/structure.

2. Theoretical change in selection process. Develop and modify the PIPS process to force the owner to minimize the use of the client's technical expertise and force the contractors to use their project/risk management skills instead of their technical expertise to differentiate themselves. This requires a mechanism to stop client decision making which requires technical expertise.

3. Use of dominant information that minimized the need of technical information. The movement of the effort to get the owner/buyer and contractors to change from a technical approach to a non-technical approach. The PIPS process approach must be changed to emphasize the logic of IMT and the PIPS structure to replace the dependence on technical expertise.

During this period the emphasis changed from testing PIPS to testing if best value PIPS was sustainable in organizations. The major clients were the City of Peoria, the University of Minnesota, the U.S. Army Medical Command, the State of Idaho, the State of Oklahoma, the Dutch national infrastructure agency, Rijkswaterstaat, and Arizona State University. PIPS testing underwent the following advancements:

1. The first test of sustainability of the process was done with the University of Minnesota. It has been ongoing for five years.

2. The first test of using the risk management system, the Performance Information Risk Management System (PIRMS) to transfer the risk to the vendors and measure the level of risk of projects independent of the selection and award process.

3. The first testing that was directed from a procurement office, Arizona State University and the State of Idaho, and not from a construction oriented group.

4. The first use of the BVP PIPS system to deliver non-construction systems and services.

5. The first major efforts outside of the United States, in the Netherlands, Botswana, and Malaysia.

6. The first adoption of the BVP PIPS technology to shape the operations of a vendor (Global Engineering Inc. and Brunsfield.)

**Sustainability of PIPS at the University of Minnesota**

UMN was interested to utilize PIPS because of their difficulty in delivering projects on time, within budget, and satisfying their university clients. For the past five years they have delivered projects using PIPS. The results at the University of Minnesota (UM) are shown in Table 4.
Table 4

**PIPS at University of Minnesota Results**

<table>
<thead>
<tr>
<th>Construction Award Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td># of Best-Value Procurements</td>
<td>184</td>
</tr>
<tr>
<td>Avg. proposal cost:</td>
<td>$64 M</td>
</tr>
<tr>
<td>Awarded Cost:</td>
<td>$57.9 M</td>
</tr>
<tr>
<td>Avg. # of proposals:</td>
<td>4</td>
</tr>
<tr>
<td>Projects where best Value was also Lowest Cost:</td>
<td>54%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Performance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td># of Completed Projects:</td>
<td>140</td>
</tr>
<tr>
<td>Cost Increases:</td>
<td>8.80%</td>
</tr>
<tr>
<td>Schedule Increases:</td>
<td>45.50%</td>
</tr>
<tr>
<td>CPPM PM post project rating of Contractor:</td>
<td>9.6</td>
</tr>
<tr>
<td>CPPM PM Management requirements:</td>
<td>-62%</td>
</tr>
</tbody>
</table>

UM was the first organization to sustain the implementation of PIPS for over 3 years. After five years, the following was observed and measured: customer satisfaction at 98%, projects awarded within budgets, minimized vendor caused deviations, targeted business goals met, and all projects are measured in terms of deviation. However, the following was observed:

1. Documented PIPS results no longer sufficient to sustain PIPS implementation. Although PIPS results are well documented, client visionaries were not able to convince all their project managers to utilize PIPS in an optimal fashion, and due to this difficulty, did not finalize their own process to fit the UM PM environment and culture.

2. A tested PIPS system without the visionaries is not sustainable. There was no strategic plan to ensure that the visionaries were sustainable. Five years of PIPS testing did not ensure sustainability of PIPS. The visionaries did not develop their individual performance line and strategic plan. The time was used for PIPS testing, and not the growth of the individuals in terms of position, pay, and individual performance line/resume. This resulted in an inconsistent plan which was reactive focused on trying to get the UM environment to accept PIPS and not a consistent strategic plan to develop the visionaries.

3. Client visionaries focused on successful project results, did not focus on the strategic plan to develop and position their core team nor concentrate on leaving a structure in place that would sustain PIPS.
U.S. Army Medical Command (Medcom)

The U.S. Army Medical Command (Medcom) also implemented best value PIPS in 2005. Because they did not control their own procurement (they were mandated to use the Corps of Engineers (COE)), they implemented PIPS after the selection/award/procurement of the contractor to do risk management (name changed to the Performance Information Risk Management System (PIRMS)). Medcom tracks 300 projects per year, at 26 different sites in the U.S., S. Korea, and Germany. Implementation of PIRMS led to the following results:

1. Identified the client as the major source of risk (similar to all other projects since 1994).
2. Minimized the deviation rate by 60%.
3. Documented problems and led to a faster solution of the problems.
4. Identified the higher performing vendors.
5. Measured all the different participants in the delivery process including government personnel.
6. Improved the customer satisfaction to 9.8 (10 being the maximum).
7. Gave the U.S. Army Medical Command a timely (once a week) and accurate way to identify the performance and risk of their $300M repair and modification construction program.

One of the most difficult tasks for organizations is to identify the reason for implementing PIPS/PIRMS. If it is successful, the vendors/contractors will use the system (RMP/WRP) in their own companies to maximize efficiency/effectiveness and profit. Therefore the goal of Medcom should be to:

1. Use the information provided by PIPS to ensure that companies who use the system in their organization get the work. If the vendors who are using the system do not get the work, then Medcom is not using the system for what it is supposed to do.
2. Ensure that the system is being used.
3. Ensure that everyone is held accountable.

City of Peoria PIPS Results

The results of running PIPS at the City of Peoria are shown in Table 5. After five years of using PIPS, some components within the City of Peoria wanted to return to the price based, low bid award system. However, the users and project managers did not want to give up a system that was efficient and effective, and used the government bureaucracy to maintain the use of PIPS.
The procurement and business services personnel at Arizona State University (ASU) decided to use the technology created at PBSRG on their own campus. After watching the development of the process for over ten years, they implemented the process on the:
1. Selection of their food services vendor on a ten year, $400M purchase.
2. Selection of their sports marketing professional.
3. Outsourcing their IT networking capability.
4. Modifying their document control vendor's contract.
5. Outsourcing their bookstore services.
6. Selection of their long distance education services.
7. Selection of their help desk, answering service.

The services have brought ASU over $100M in higher commissions, capital investment by vendors, and have created a seamless resource of experts with minimal management, direction, and control needed for the ASU leadership. The PIPS has been used not only to optimize the services, but to increase the performance and value, and to integrate the ASU leadership and vendor expertise to slash costs and provide measured professional services at ASU.

ASU has succeeded in having the vendors implement PIPS into their organizations, thus minimizing the need for another layer of management directing the services. As the economy is forcing ASU to cut costs, PIPS/PIRMS has been the organizational model to integrate ASU with its vendors.
State of Oklahoma

The State of Oklahoma has implemented PIPS as both a procurement process and a process to deliver construction services for the past three years. An overview of their efforts is shown in Table 6. Lessons learned at the State of Oklahoma include (PBSRG, 2010):

1. The paradigm shift is from technical description to performance measurement. Technical specifications are used, but performance measurements for services are the most critical information.
2. The transfer of risk and control to the vendor is a disruptive concept. Vendors are used to being reactive and depending on the client to work together with the vendor to attempt to resolve issues. The transfer of risk and control to the vendor, forces the vendor to be an expert.
3. Vendors need assistance to move to the new paradigm of being the expert, being proactive, and knowing how to minimize risk that they do not control.
4. Government procurement and project management personnel have been micro-managing the vendor and creating a shelter for vendors avoiding accountability.
5. The price based system has eroded the expertise of the vendor base and increased the overall cost to the state of Oklahoma.

Table 6

<table>
<thead>
<tr>
<th>Oklahoma Best Value Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oklahoma Best Value Project Information</strong></td>
</tr>
<tr>
<td># of Best-Value Procurements</td>
</tr>
<tr>
<td>Estimated Value of Best-Value Procurements</td>
</tr>
<tr>
<td>Protest Success Rate (# of protest won / # of protests)</td>
</tr>
<tr>
<td># of Different Services</td>
</tr>
<tr>
<td>% Where Identified Best-Value was Lowest Cost</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Completed Projects</td>
</tr>
<tr>
<td>Average Customer Satisfaction</td>
</tr>
<tr>
<td>Cost Savings</td>
</tr>
<tr>
<td>% On-time</td>
</tr>
<tr>
<td>% On-budget</td>
</tr>
</tbody>
</table>


Mark Little, the procurement director for the State of Idaho, discovered PIPS in 2007. He introduced the concepts to the Western States Contracting Association (WSCA) in 2008. His efforts led to the use of PIPS in the following procurements:

1. Medical insurance for four of the Idaho university systems (successfully completed.)
2. Medical services for the Idaho Department of Corrections (successfully completed.)
3. $200M ERP system for the state of Alaska (ongoing.)
4. Procurement of integrated facility management software/hardware system (ongoing.)
5. $30M procurement of a Driver Motor Vehicle (DMV) integrated system (ongoing.)
6. Food services procurement at two Idaho universities (one completed, one ongoing.)

The procurement for the medical service for the Idaho Department of Corrections (IDC), was a landmark success for BVP/PIPS. IDC was having problems with their service. They used PIPS to get a better quality of service. PIPS was used for the selection of the vendor. The best value vendor turned out to be the incumbent who IDC did not like due to poor service. They saw no possibility of increased service. As many vendors, the incumbent vendor perceived BVP/PIPS as just another procurement system, another method to get an award. However, upon winning the award, the vendor was directed to proceed with the best value approach of identifying the risk that the vendor does not control, and measuring their technical performance. After receiving further PIPS education from PBSRG, the vendor did the following:

1. Changed their regional manager. Previously, they had stated to the IDC that they would not change the regional manager.
2. Measured their performance in critical areas. They also measured performance of four other regions where they have contracts to benchmark the IDC performance. They also started to use the quarterly performance ratings to look for trends. The vendor is giving IDC the WRR and RMP, and is also making the measurements available to the IDC, creating an environment of total transparency.
3. The vendor is using the performance measurements to identify if they had an internal problem with technical performance, and if it is not a performance issue, they can propose how to the IDC needs further services that would increase the scope of the contract.

The vendor has taken the best value PIPS approach to increase their performance, value, and profit. This action is the first time the vendor (who is a major provider of health services for correctional facilities) has taken the best value approach. WSCA is now crafting a contract modification which will allow all WSCA members, and other government organizations to use the WSCA contract to implement best value PIPS (WSCA Board Meeting Minutes, 2010).

**Conclusions of Development Period to Implement and Sustain PIPS**

The development of PIPS between 2005 and 2010 resulted in the following conclusions:

1. The sustainability of the BVP PIPS system is directly related to the understanding of the visionaries of the core team. Strong understanding, high probability of sustainability. The more visionaries the greater the chance of sustainability.
2. PIPS is based on a foundation of IMT of deductive logic and common sense. If PIPS is done accurately, it is easier to sustain because easier to explain, simpler to understand, and gets better results. The most accurate version is described in the following section. If it is not done in that fashion, it will bring confusion, transactions, and higher costs.
3. The use of dominant information (information that allows everyone to predict the future outcome) is key. The best value is the best value for the lowest cost. If contractors do not offer dominant information in their technical risk proposal, their non-technical risk proposal, and their value added submittals, the best value is the lowest priced option.
Dominant information means minimal decision making, minimum use of technical expertise during the selection process, and shorter selection processes.

The demand for the implementation of PIPS/PIRMS has been exponential in the last five years. PBSRG, the research center of PIPS/PIRMS development has been struggling with the growing demand. As a group that is assisting in the implementation and development of PIPS, PBSRG is an advanced representation of an organization implementing PIPS. In 2010, PBSRG is attempting to change its operational model, the process itself, and the explanation of the process.

2010 PIPS/PIRMS Model

In 2010, PBSRG is changing its structure and PIPS process to increase the probability of making PIPS a sustainable system. In January 2010, Kashiwagi made the following observations:

1. Not all of the research clients (owners) and PBSRG researchers were making use of the lessons learned from the tests of other clients.
2. Not all the research clients were taking the visionary approach. They were mired in the actual PIPS/PIRMS tests, and not the future direction.
3. The paradigm was not changing fast enough. There was too much resistance, and Kashiwagi perceived that the requirement of PBSRG as the "source" of PIPS/PIRMS to stabilize the many research clients was not sustainable. A new model would have to be created.

The Development of Core Teams of Experts

PBSRG has set the following research goals for 2011 and beyond:

1. Visionaries can no longer depend on PBSRG to be the visionary. PBSRG can assist in the implementation of PIPS, but visionaries must understand the strategic plan and paradigm shift of IMT and PIPS. Visionaries who lead a research client's core team, must work with other visionaries, and must know the latest lessons learned on all of PBSRG’s projects.
2. Visionaries must have a strategic plan of personal and organizational sustainability within their organization and learn and implement PIPS faster than before.
3. Visionaries must identify leaders in their organization who have authority, control, and an understanding of the need for efficiency, effectiveness, and accountability. They must continually educate their leaders.
4. Visionaries must study and understand Information Measurement Theory (IMT). PBSRG will now exam and certify visionaries who understand.
5. BVP/PIPS must be simplified.
6. PIPS transactions must be minimized.

BVP/PIPS has gone through the biggest renovation in its 16 year development due to the lessons learned. The process has changed, and the explanation has become much simpler. The next section will introduce the latest BVP/PIPS process and steps.
BVP PIPS

BVP/PIPS is a process/structure to deliver services. It changes the procurement agent's role from being the guardian over the award of a contract, to a facilitator of the delivery of services. The new role of facilitator starts when a user has a requirement, and ends when the service has been delivered. Instead of being a procurement process, it assists in the development of an intent of the client by expert vendors, identifies the best value vendor (most value for the lowest price), assists the best value vendor to determine if they can meet the intent of the client, and then ensuring that the vendor can deliver on their proposal.

1. The BVP/PIPS has three phases: selection, pre-award, and management of the project risk (Figure 2)
2. The selection phase has five filters (Figure 3): past performance information, competitive ability to manage and minimize project risk, interview of key personnel, prioritizing the vendors and doing a dominance check to ensure that the best value vendor is the best value.
3. The client's representatives assume the vendors are experts through the selection process (award process in the Netherlands) then assume the best value vendor is not an expert in the pre-award phase to minimize the risk of the vendor. The paradigm is to minimize the need for technical decision making in the selection process, and maximizing the need for the best value vendor to prove they are an expert in the pre-award phase.
4. The previous paradigm also forces vendors to show dominant differential in performance that minimizes the need for any technical decision making by the client.
5. The risk is shifted to the vendors to show value through dominant expertise, knowing that experts minimize both risk and cost, thus providing the best value for the lowest cost.

Figure 2. Phases of BVP/PIPS
The BVP/PIPS is a closed loop system (Figure 4). Only one vendor at a time can move into the pre-award phase. If the vendor clarifies their proposal sufficiently by completing their risk management plan (RMP) and their weekly risk report (WRR), and meets the client's technical intent and their proposal as specified in the technical specifications (written by the contractor and agreed to by the client's representatives,) the contract is awarded to the best value vendor. The best value vendor uses the contract as a risk minimization mechanism, by meeting the technical requirements of the project and managing and minimizing the risk that they do not control.
PIPS Selection of Best Value Vendor

BVP/PIPS differs from other procurement and risk management systems because it minimizes subjective decision making of the client's experts. It forces the vendors to compete based on value (quality risk management capability and price.) By making the assumption that the vendor is an expert, and disciplining the client's representatives to follow this structure, the client's representatives do not make any technical decisions or judgments on the vendors. If a vendor is dominantly better (easy to see, get a consensus dominant rating, or a non-technical reason why they are dominantly better), they have provided information that clearly shows their dominant performance. If not, the process will be followed, and the best value for the lowest price vendor shall be identified. PIPS extends the definition of dominance to include if any vendor cost is either over a pre-specified amount, or under the average proposal price, that vendor will be dismissed from the competition unless they can show dominant proof why they should not be dismissed.

The most important filter of the process is the interview, followed by the risk management capability that shows a management of the risk that the vendor does not control. The least important is the past performance information on the company and key individuals.

The vendor's capability to do the project is represented by five submittals: schedule, price, capability to minimize technical risk (1 page), non-technical risk that they do not control and how they will manage and minimize them (2 pages), and value added (things that were not included in the intent of the client.) Schedule and price should not be scored by the selection committee. The vendors are requested to be experts. If they are experts they do not have technical risk. The vendors are requested to identify why their competitors may have a risk, but why they do not have the risk. Dominant inputs include:

1. Vendor has done six of these projects in the last ten years and has:
2. Cost and time deviations are under 1%.
3. Proposed project manager has done all six of these projects, with deviation rate of 1% (due to the owner), customer satisfaction rate of 9.8 (out of 10.0), has used RMP/WRR on all of the projects, is the best project manager in the company by 2.0 points in the company.
4. When encountered with any unforeseen issues, project manager finds the most economical solution in terms of time and cost, proposes it to the client, and gives them a preset schedule to follow.

The technical risk submittal should not be technical in nature (require technical experts to rate.) It should not include items that may have been left off the specifications (value added section.) It should identify the technical dominance of the vendor over competing firms that minimizes risks that competing vendors may have, and why they do not have that technical risk. If there are technical issues with the buyer's intent, the vendor should identify the risk to the project in terms of longer performance periods, potential issues, and higher costs, and put their solution in the value added submittal.

The non-technical risk submittal should include identification of risk that the vendor does not control, and how the vendor will manage and minimize risk that they do not control, and how they will react to the risk to minimize the project deviations to the buyer. This submittal allows the buyer to make the vendor accountable to manage and minimize project risk including risk that is caused by other parties who participate in the delivery of the project. With one party managing and minimizing project deviation, the confusion caused by non-transparency, subjective decision making, a lack of accountability, and no clear documentation is alleviated.

The interview filter is the most heavily weighted filter/criteria because it gives the most dominant information in the shortest period of time. What the interview should produce on the vendor's critical personnel includes:
   1. The ability to minimize risk by managing deviation.
   2. The ability to be proactive.
   3. The ability to act in the best interest of the client and to resolve issues quickly.
   4. The ability to understand PIPS.

The selection group is looking for quick, short, concise, non-technical, and simple explanations. The key personnel should be able to show why they were picked for the project and give total confidence that they can do the project.

**Dominance Ratings and Dominance Check**

Dominance ratings and dominance checks are both products of the client's selection board "not making decisions," but forcing the contractors to take accountability and show dominant value. All ratings given to contractor project capability submittals and the interview of contractor key people should use the "dominance" concept. If the submittal or interview results are not dominant in terms of performance, they should be given a "5" rating, in a 1 to 10 scale, 1 being dominantly bad, and 10 being able to dominantly perform. Another explanation of the use of a
dominant rating is that the information provided is dominant that the contractor will perform. Dominant information includes performance information that is clear, simple, and predictive, benchmarked performance ratings that show very high and unique performance, and very high experience and expertise levels, if the information is not dominant, and decision making may be required, the rating should be a "5." The job of the selection panel is to ensure that no decision making is done that helps any particular competing contractor. If there is no dominant information, the best value will be the best value for the lowest price where there is no dominant information that predicts nonperformance.

The dominance check has its origins in the Federal Acquisition Regulation (FAR.) At the end of the selection phase, when the proposals have been rated, and the best value vendor has been prioritized, a dominance check is performed. The Procurement officer takes all the information and reviews it to identify if the best value vendor is indeed the best value for the lowest price. The dominance check is encompasses two main issues. If the best value vendor is over a preset amount of the next prioritized best value, the best value vendor must show dominant rationale why they shouldn't be eliminated for high price. If the procurement officer cannot identify the dominant information, the next best value is selected to go through the dominance check and pre-award period. If any vendor is under a preset amount under the average submitted price of the vendors, the low priced vendor must also show dominant information why they should not be eliminated. If they cannot they should be considered non-responsive because low price brings risk to a project. If a question can be asked, or justification is being required, or the project manager or procurement officers are at risk, there is no dominant information.

**PIPS Pre-Award Phase**

The most important phase of the BVP/PIPS is the pre-award phase. If done correctly, the pre-award phase should be used as a clarification period to clarify how the vendor will deliver what they have proposed. To clarify their proposal they shall:

1. Create a risk management plan (RMP) that addresses every concern and risk of the vendors and client.
2. Create a milestone schedule that incorporates the RMP.
3. Confirm the technical requirement, and how they will deliver the requirement.

If the prioritized best value vendor cannot do the above, the next best value vendor will be pulled into the pre-award phase. The pre-award phase is not a discussion phase, it is a clarification phase. The vendor should not be allowed to change their pricing, what they are offering, or the intent of the buyer.

**Risk Management Plan (RMP)**

The RMP is a living document that identifies concerns or risks to the project. the RMP should identify:

1. The risk and who causes the risk.
2. How the vendor will attempt to minimize the risk from happening.
3. If the risk does happen, what will the vendor do.
4. Should identify the best ways to solve the risk, cost and time deviations, and which method should be used and why.
5. The time frame the client should make the decision to approve.

The RMP must be approved by the client, and becomes a living document throughout the project duration.

Weekly Risk Report (WRR)

The WRR contains the following:

1. Points of contacts who will receive the WRR during the project.
2. Milestone schedule.
4. Risk sheet that identifies who caused the risk, solution, and time and cost deviations.
5. Modifications (deviations) on the project.
6. Performance measurements for services contracts.

If a risk happens and causes a cost or time deviation, the risk is explained and documented on the risk sheet. If the risk has not happened it goes on the RMP, and a plan to minimize the risk, and mitigate it if it happens is documented. All modifications should have concise, simple, and dominant documentation. The WRR should be distributed weekly to all the participants who are involved and interested.

The weekly risk report and the risk management plan are the main document and communications of the contract administration. It allows the owner's representatives to do quality assurance. It therefore defines quality assurance as a non-technical function.

Conclusions

PBSRG has been developing BVP/PIPS for the last 16 years. Lessons learned on the 700+ tests have resulted in simplifying the process, and making the PIPS/PIRMS more sustainable. BVP/PIPS is different from other processes due to:

1. The minimization of owner/buyer subjectivity and technical decision making during the selection phase (Dutch award phase).
2. The process allows the best value vendor to define the delivered service and how it will be delivered.
3. It transferring the risk and control to a best value vendor who has minimal technical risk.
4. It allows the vendor to measure and document the performance of all parties involved and makes them accountable by using the risk management plan (RMP) and weekly risk report (WRR.)
5. Uses the contract to manage and minimize risk instead of controlling, directing, and inspecting the vendor.
The development of PIPS has gone through the performance information period, the PIPS testing period, and the implementation period. The research test results have confirmed the following IMT principles and industry structure model concepts:

1. Management, direction, and control of vendors by buyers is ineffective, inefficient, and results in higher costs and lower profit margins for vendors.
2. The use of minimum standards in directions coupled with the award to the lowest bidder results in a degeneration of vendor quality and skill.
3. Project and services value and cost are optimized by expert vendors who document project deviations. This confirms the thesis of Deming (1982) who stated that the minimization of deviation and not minimum standards will lead to optimization of value.
4. Expert contractors have minimal technical risk. It is their ability to manage and minimize the risk that they do not control, that differentiates them from the non-expert contractors.
5. PIPS/PIRMS process/structure with the IMT based environment, has the capability to assist non-performers perform.
6. The development of visionaries who work together in core teams is the most critical task in the sustaining of the new best value environment. Because they have no influence or control over their own organizations, PIPS visionaries must develop themselves into sources of PIPS technology. They will define themselves, their capability, and their results by using PIPS/IMT.

Best value PIPS/PIRMS is a new way to deliver services, run organizations, and optimize supply chains. It forms a leadership structure that assists inexperienced project managers to get optimal results. The underlying philosophy of visionaries implementing PIPS/PIRMS is the Information Measurement Theory (IMT.) It's basic tenants include the inability for a person to manage, direct, and control others, an event has only one outcome once the initial conditions are fixed, and experts can always tell you what they are going to do, and what problems they will encounter, before it happens. And because no one knows everything, they have a method to manage and minimize risk that they do not control before the risks occur.

Best value procurement PIPS/PIRMS will be continually modified to make it simpler and easier to run. It is the future of the delivery of services because it minimizes the need to manage, direct, and control, and increases value and quality. It also aligns the supply chain to minimize cost and transactions.

References


WSCA Board Meeting Minutes, 2010, December 7, 2010, Sheraton Uptown NM, Hotel, Albuquerque, NM.

What is Happening in Supply Chain Management?
From Push to Pull through Best Value Thinking

Dr. Sicco C. Santema, PhD
Professor of Marketing and Supply Management
Technical University Delft, Netherlands

Introduction

In this paper we take a closer look at developments in supply management. The main change in this discipline seems to be (2011) that cooperation and risk management are taking over the classical silo based way of looking at business. Companies start to learn that transactions block the profits throughout the chain. Or, to put it the other way around, supply chain parties learn that sharing interests is earning much more money and that supply chains become ‘faster, cheaper and better’!

Information is so readily available that it becomes dominant who is the best in his field, and who is exactly the one to supply you. We now know that faster cheaper and better supply chains can be built through expert selection, based on their contribution to the whole value creating process in the supply chain. If we let the expert excel, the only parameter left to manage is the risk we cannot control, together with that supplier. Best Value Procurement is an instrument to achieve that supply chain situation.

The main research question of this paper is: ‘how can we redesign supply chains in order the create faster, cheaper and better flow through the chain, using the power from within, the expertise of suppliers?’

We will answer this question through literature research, rational thinking and using ‘dominant logic’.

In this paper we first take a look at the classic, transaction based approach of setting up supply chains. We describe the Porter way of thinking and the effects of transaction based thinking to the profits and flow in a supply chain. We then describe the BVP based changes in buyer supplier relationships, followed by a discussion on value and making way for the expert in order to let him perform his contribution. We finalize the paper with a conclusion, giving the answer to the main research question.

Classic Transaction based approach

In the classic economic theories, the organization is the starting point of thinking. Looking at Porter’s Value Chain model (Porter, 1980), an organization consists of primary (operational) functions like incoming logistics, production and sales and secondary (over headed) functions
like purchasing, ICT en R&D. The organization is aiming for maximization of profits from the supply chain (Amit et al., 1993). Margins are generated from customers (see Figure 1).

![Figure 1. Porter’s Way of Looking at Organizations (Porter, 1980)](image)

Relations in the supply chain are negotiated amongst parties and written down in a contract. Transactions form the basics in this thinking, transaction cost economics is the theoretical background. Looking from purchasing perspective, the objective is to minimize the transaction price, and thus reduce the incoming costs in an organization (this is perception!). Most of the times, there is an internal customer (the actual department that needs the goods or services). The purchasing process is set out in Figure 2.

![Figure 2. The Purchasing Process](image)

Important to notice is that the purchasing function is the one that is going to specify the needs (first step in Figure 2). Later on in this paper we will see that this is value reducing step in supply chain and flow thinking. Why does the non-expert specify the needs of an internal customer that later on will be supplied by the expert? It is simply the way we are taught to think!

From sales perspective, something similar in classical supply chains happens. The objective of sales is to maximize the turnover (or sometimes profit) in a market. The typical way to do that is to push as hard as you can the available products and services from the supplier into the market towards a particular customer. The real need of a customer is subjected to the actual availability
within the supplier’s organization. More sophisticated sales people even work principles like ‘customer value’, enabling them to maximize the turnover or profit from one customer.

Up to now we have described a nice antagonistic mechanism: sales is aiming for maximum sales in available goods or services, purchasing is aiming for the reduction of transaction costs through specifying the needs of an internal customer, illustrated in Figure 3.

Figure 3. The Antagonistic Relation Between Sales and Purchasing

Now We Go One Step Further

If we draw up a simple supply chain with four parties involved, we have (at least) three antagonistic relations in the chain. All destroying value creation, of even worse prevent parties to generate value. If all parties in the supply chain work this way, they all have their own administration, R&D, Quality insurance and so on. All for the same output at the end of the supply chain. Imagine the waste that is generated, all being paid by the customers and in the end by the consumers (at the end of the supply chain). In figure 4 the unnecessary, non value adding costs in the supply chain are illustrated.
What is Happening in Supply Chain Management? From Push to Pull through BV Thinking

Figure 4. The Unnecessary Costs In A Classic Supply Chain

The classic transactional way of thinking in supply chains stems from the early days of economic thinking. Back then the information was trapped in an organization and related to a product or service. An order was sent through the physical mail, as were invoices and payments (through banks). Stocks (both incoming and outgoing) were safeguarding against uncertainty and non-availability of information. People had to make decisions within their own scope.

This way of thinking is called the pushed supply chain (products, services and information are pushed down the chain).

Changes in Supplier – Buyer relationships

As described above, classical relations are based on (pushed) transactions and resources that create competitive advantage (Barney, 1991). Nowadays (2011) the information of the business of the customer are known and even a few steps further down the chain, that same information is available. The same holds for purchasing information. A purchasing officer should add value to his organization by investigating availability of goods and services in earlier steps in the chain than his supplier. The crisis of 2008/9 has forced companies to invest in the knowledge of markets further up (purchasing) of down (sales) the chain. Relating this information to their own business improved their forecasting and therefore their value creation (Santema et al, 2003). But still, this is old school, push based thinking. It is about using information to reduce the risks of missed opportunities. It is still ‘me’ against the rest, competitive thinking (Prahalad, 1990).

New school relationships between suppliers and customers is actually about pulling the products and services from the (downstream) supply chain on the moment that these goods and services are needed (preferably sold). This looks like a classic vertical integrated supply chain, consisting of independent companies. This is possible through information sharing and trust in the expert that he will do what he is good at! Which is what he was hired for anyway! From the Lean principles it is known that stocks, overproduction, logistics etc are so called ‘waste’ and thus not adding value. Now we are able to reduce this waste in a supply chain, simply by opening up the borders of our organizations and sharing real data, real information throughout the chain.

If we zoom in on one supplier – customer relationship, we are able to relate the operations function of the customer (the ‘internal customer’ in Figure 2) to the operations function of the supplier (the actual ‘producer’ of the goods and services needed), we extract all the cost adding (non value adding) steps in the classic transaction based thinking. That is a simple sentence that might need some more attention!

How are we sure that the supplier is going to supply what we need, or better put, what is adding value for our customers? That is where Best Value Procurement comes in. If we are able to select the expert, we do not have to specify or control what he is going to supply! In the next paragraph this mechanism is described in greater detail.
The changes in supplier – buyer relationships are enormous, due to the availability of (dominant) information. The real value of sales and purchasing functions becomes clear. For sales it is finding potential customers and relating them to the core process of the supplier. For purchasing it is about finding the expert and give him (or her!) the room he needs to excel! Another great example lays in the financials in the new school approach of supply chain management. What is the added value of sending invoices as the order is already containing all the dominant information of the transfer and thus for payment possibilities? And what is the added value of not paying invoices as to upswing the cash flow? In the classic transaction cost (or shareholders value) approach it is adding value to the single company that is doing that. The shareholder’s value is boosted and so are the bonuses of the managers! In supply chain terms there is no value generated, only costs. In some smart supply chains, the money is wired at the moment the goods are delivered, based on the order generated by the operations function of the buyer. That is smart (waste reduction) thinking!

**The ‘Me and Us’ Paradigm: From ‘Win Win’ Towards ‘Winning’**

Porterian thinking is related to ‘me’ thinking. The main objective of an organization is to maximize its own turnover or profit. Transactions are negotiated on so called ‘win win’ mechanisms. You give some, you gain some. It is about the one ‘me’ negotiating with the other ‘me’! Is it really possible that they both can win, given the fact that the supplier supplies what the customer wants? Can two parties really win over one transaction and one (volume of) goods and services transferred between them? It is dominant that this is not possible! As long as ‘me’ is the dominant organizational principle, supplier – buyer relationships cannot maximize value.

The ‘winning’ paradigm suggests that relationships are for the benefit of both parties, suppliers and buyers. That is why we call this the Best Value Relationships. Both parties win!

**Creating Downstream Value**

The main goal for sales people in modern supply chains is to help customers to find (new) markets. That is where his expertise lies. Through the creation of new potential for the customer, the supplier gets more volume on his expertise and thus more profit. Knowing what the unique selling propositions of the supplier are, a sales person should change from a transaction creator (see above) towards a flow generator, creating value for his customers. The more the customer earns, the more the (connected) supplier earns. This is called ‘downstream value’. We even know sales people that are helping customers to develop other (=more) customers, in order to make the customers more robust and thus reduce the risk of the fluctuations in the volume of this customer. Smart thinking, which is not about the product or service itself, but about the processes around it. The real expert knows these things and develops supply chains into value creating flow oriented relationships.

**Creating Upstream Value**
The same is valid for the purchasing people. The main, value oriented, goal for them is to help suppliers to get more value in, not from the particular buyer, but from other markets or buyers. If the volume (for other customers) of a supplier is raised, the risk of being too large a customer for that supplier is reduced. Also there is economy of scale potential, as one might expect that larger volumes generate lower prices. This is called ‘upstream value’. It is the role of modern purchasing people to generate that kind of value.

**The Role of Best Value Procurement**

Best Value Procurement helps the purchasing function to find a supplier that best fits the operational needs of the buyer’s firm. And it also enables the supplier to think ‘with the end in mind’. So downstream and upstream value are generated at the same time. Purchasers create more value for suppliers, whereas suppliers create more value for customers. There is one aspect yet to discuss. That is the flow of information. Corporations still tend to think that information is proprietary. Which is not true, look for any subject on the internet and you will find all the information needed. So opening up on information is the new name of the game.

Opening up the operational needs, the end result of the customer’s organization enables the (potential) suppliers to translate that added value result into their contribution, using the RAVA plan to illustrate that. The past performance of the (potential) supplier is a license to operate and the interviews assess the capabilities of the operational people involved in the delivery of value. Obviously the price has to be correct, but why would the price be wrong if a supplier knows what his added value is in terms of the value creation is for the customer. If his price is not correct he will not be the supplier and therefore will not be the expert. Or, to put it in other words, only the expert can have risk, price and quality in place at the same time. The best performer in the chain has the lowest price, because he is knowing what he is doing! For that reason we believe that the real Best Value supplier also has the best price, otherwise he is not the expert we want him to be.

On the other hand the buyer should think of his potential for the supplier, creating up stream value. If the buyer knows with which supplier he can create the most value, he also knows that with that specific supplier his risk will be the lowest and his (cost) price will be the lowest.

This is why we think that creating new supply chains, using BVP mechanisms, can really create a lot of value for both supplier and buyer! Planning with the end result in mind is one of the prerequisites to harvest the potential value that is hidden in classical chains, see Figure 5.
Conclusion

The main research question of this paper is: ‘how can we redesign supply chains in order the create faster, cheaper and better flow through the chain, using the power from within, the expertise of suppliers?’

The answer lies within two things:
- Give way to experts in the chain
- Free flow of information

The first item is addressing the issue of customers specifying what suppliers have to supply, whereas after the trade the supplier has delivered where ever his competences have lied. He cannot do anything else (by definition). Incorporating knowledge of the markets of the customers, the suppliers could add even more value. The contributions to the adding value mechanism of the customer is a wonderful rephrasing of the word ‘supply’. A real expert will know what his contribution to that can be, and thus generate more value for his company (and respective supply chain).

The same holds for the customers. If customers know better what expertise is needed in the supply market, it is easier for them to harvest the potential value that is available in the chain. It means inviting different (or other) suppliers to illustrate their potential.

The free flow of information part is potentially old school anyway. The generation of managers that is coming up (2011) is so used to social media, that covering, beholding or prohibiting information flow is useless, even for patents (which are public anyway !!) or company restricted. There is a pretty large chance that somebody else in the world is inventing the same product or service at the same time as we have ‘invented’ it. So moving forward, the end market is in favor of all parties in the chain, and maximal value is generated!
More precisely, we would suggest the following with regards to the research question: ‘How can we redesign supply chains in order to create faster, cheaper and better flow through the chain, using the power from within, the expertise of suppliers?’

- Redesign of the supply chain:
  - Free the supplier from specifications and let him excel his expertise
- Faster, cheaper and better flow:
  - As soon as the expert is able to perform at his best (which is what he wants!), value will come in, as well as our value creation potential will flow back into the chain.
- Speeding up the supply chain:
  - Through the chain, using the power from within, the expertise of suppliers and the potentials if information exchange, such as internet

References


Kashiwagi, D. (2009); A revolutionary approach to project management and risk minimization; best value performance information procurement system. PBSRG, Arizona State University


Santema, S.C. & J. Van de Rijt (2003); The purchaser as a valuer of resources; Conference Proceedings; Ipsera; April 14-16; Budapest; Hungary p 1037 - 1047


© PBSRG 2011  Journal for the Advancement of Performance Information and Value  VOL. 3 NO. 1  53
Leeuwen, M. van (2010); Using best value procurement in Europe, need for compromise? (in this Special Issue)


PSI Bouw (2007); Gunnen op Waarde, hoe doe je dat? Rapport in het kader van het PSIBouw-programma Gunnen op waarde (only in Dutch).

Rijt, J. van de; W. Witteveen, C. Vis & S. Santema (2010); Best Value at the Directorate-General for Public Works and Water Management in The Netherlands (in this Special Issue)

Significant (2010), Evaluation Best Value Procurement (Evaluatie Best Value Procurement; only in Dutch).

Veenendaal, S & W. Witteveen (2010); Tender Environmental Impact Assessment Extra Discharge Capacity Afsluitdijk (in this Special Issue)
What is Happening in Supply Chain Management? From Push to Pull through BV Thinking
Using Best Value PiPS Procurement in Europe, Need for Compromise?

Marianne van Leeuwen
Legal advisor at Rijkswaterstaat
Ministry of Transport
The Netherlands
marianne.van.leeuwen@rws.nl

Introduction

Best Value Procurement Performance Information Procurement System (hereinafter: BVP-PiPS) is a methodology developed in the United States and is now being used by private and public contractors in the Netherlands. For public contractors in Europe, application of BVP-PiPS is not straightforward because of the constraints of the European legislation on procurement. This paper describes how BVP-PiPS can be used in a European legal context. First, some basic aspects of European procurement law are explained. Next, the original BVP-PiPS method is described in short. Subsequently the method is tested against the European legal constraints. Implications from European procurement law to all phases from the BVP-PiPS method will be described. The paper ends with conclusions on how BVP-PiPS can be used within the European legal framework.

Some Aspects of European Law and Background

In this section different possible procurement procedures under European law are described, as well as the two basic ways to procure (“lowest price” vs the Most Economically Advantageous Tender”).

Procurement Procedures Under European law

The European Union Procurement Directives set out the legal framework for public procurement. Above a certain threshold public authorities have to comply with European Directive 2004/18 on the coordination of procedures for the award of public works contracts, supply contracts and public service contracts (hereinafter: “Directive”). The Directive gives contracting authorities a number of possible procurement procedures. Three of the most commonly used procedures are:

1. Open procedure. An open procedure is a procedure whereby any interested company that meets the applicable selection criteria (selection criteria are also referred to as ‘prequalification criteria’ which is probably more familiar to American readers; this paper will use the word selection criteria because it fits the terminology used in the Directive), may submit a tender. After publication of the tender, the contracting authority
organizes general consultations for interested companies. After consultations, tenders are submitted. In an open procedure selection of suitable companies (by assessing tenderers on pre-established selection criteria) and awarding the best tender (by evaluating tenders on pre-established award criteria) take place at the same time.

An open procedure is designed as follows (Figure 1):

2. Restricted procedure. A restricted procedure is a procedure in which any company may request to participate and whereby only those companies invited by the contracting authority may submit a tender. The companies are invited after selection on the basis of pre-established selection criteria. Subsequently the selected companies are invited to join consultations after which the tenders are submitted and evaluated on the basis of pre-established award criteria. Therefore, the selection of tenderers and awarding the contract to the best tender take place consecutively. A restricted procedure design is illustrated in Figure 2.

3. Competitive dialogue. A Competitive dialogue is a procedure in which any company may request to participate and whereby the contracting authority conducts a dialogue with the candidates admitted to that procedure (on the basis of pre-established selection criteria). The procedure aims to develop one or more suitable alternatives capable of meeting its requirements in dialogues between contracting authority and the tenderer. In the competitive dialogue - in view of the flexibility which may be required and the high level of costs associated with such methods of procurement - contracting authorities should be entitled to make provision for the procedure to be conducted in successive stages in order gradually to reduce the number of tenders. This reduction should ensure that there is genuine competition. Tenders are subsequently awarded on pre-established award criteria. A competitive dialogue can be designed in different ways. For an example, see Figure 3:
Figure 2. Restricted Procedure

- Publication of tender by contracting authority
- Request for participation by interested companies
- Selection of suitable companies
- Consultations
- Submitting of tenders
- Award to the m.e.a.t. (or lowest price)
- Contractual phase

Figure 3. Competitive Dialogue Example

- Publication of tender by contracting authority
- Request for participation by interested companies
- Selection of 5 suitable companies
- Dialogue phase 1
- Reduction to 2/3 companies
- Dialogue phase 2
- Submitting of tenders
- Award to m.e.a.t.
- Contractual phase
Award criteria

According to number Recital 46 and Article 53 Directive, contracts that fall under the scope of this Directive should be awarded on the basis of objective criteria to ensure compliance with the principles of transparency, non-discrimination, equal treatment and to guarantee that tenders are assessed in conditions of effective competition. (Contracts for pecuniary interest concluded between a contracting authority and an economic operator having as their object the execution of works, supply of products or the provision of services and which have a value estimated to be equal or greater than the thresholds stated in the Directive.) As a result two award criteria are allowed: “the lowest price” and “the most economically advantageous tender”.

In the past, procurement strategies based on the award criterion lowest price and detailed technical specifications have often been used to tender public works contracts. In many cases the outcome of these tenders have not been satisfactory. Choosing to tender with detailed specifications made low contractors’ performance possible (Toekomstperspectief Bouwsector). Using the lowest price as an award criterion even led to fraudulent behavior by contractors (TK 2009–2010, 29 385, nr. 55, p. 1.). This is why, in the last years there has been a shift towards using the most economically advantageous tender (m.e.a.t) as an award criterion.

Rijkswaterstaat for instance, the largest public contracting authority in the infrastructure market, has the ambition to become the leading agency within the Central Administration (Rijkswaterstaat toonaangevend opdrachtgever (only in Dutch), 2008). One of the means to reach this ambition is to award 90% of all infrastructure contracts by using on the award criterion m.e.a.t in 2012. The following table shows the progress since Rijkswaterstaat started in 2005.

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progress Towards m.e.a.t. Goals</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total number of tenders</td>
</tr>
<tr>
<td>Tenders with MEAT</td>
</tr>
<tr>
<td>MEAT was lowest price</td>
</tr>
</tbody>
</table>

When contracting authorities choose to award the contract to the m.e.a.t. they should determine economic and quality criteria, which as a whole determine which tender offers most value for money.

Three of the most commonly used ways to combine price and quality are:

1. Scoring-method: price and quality are both scored in points. The m.e.a.t. has the highest total score;
2. Monetarising: all “quality” criteria are “transformed” into “fictitious” Euros. To determine the m.e.a.t., the amount of “fictitious” Euros scored on quality is deducted from the offered price (see Van de Rijt, Witteveen, et al. in this Issue). The lowest fictitious price is the m.e.a.t.;
3. Price-quality ratio: points on quality are divided by the price offered. The highest scoring tender is the m.e.a.t.

The level of performance and the value for money of each tender is to be assessed in the light of the object (e.g. a highway or an engineering service) of the contract as defined in the (technical) specifications. This implies that the determination of the award criteria also depends on the object of the contract (Recital 46, Directive 2004/18/EC).

Under European law all award criteria have to be objective in order to meet the basic requirements of transparency, non-discrimination and effective competition. It is therefore not a surprise that contracting authorities have been struggling with determining award criteria that add value and at the same time meet all legal requirements. For instance, some contracting authorities have been focusing on transparency quite strongly so that all underlying aspects and points of interest on which a tender is scored, are stated in the tender documents. As a result these award criteria become minimum quality levels of performance and no dominant differences in quality levels are to be found between the tenders offered. The result of this tender process is then comparable to a lowest price tender.

BVP-PiPS offers a solution to the dilemma of determining award criteria that add value and at the same time meet legal requirements. The questions remain how BVP-PiPS can be used in the European legal context. This paper aims to answer this last question by ‘testing’ the BVP-PiPS filters against European legislation and case law. The next section describes the the BVP-PiPs process. Next, the European legal context on this methodology will be described.

**BVP-PIPS**

The method provides contracting authorities with a tool to identify, select, and manage the best contractor for a specific (complex) project. In the procurement process several different ‘filters’ are used by ranking tenderers on the basis of their capability (scores) in these 6 filters. In this way BVP-PiPS separates 'high performers' from 'low performers'. The BVP-PIPS structure identifies the best value for the lowest price. The steps of the BVP-PiPS process are as follows.

*Filter 1: Past performance information*

In the BVP-PiPS method past performance information is the first indicator for selecting a high performing contractor. BVP-PiPS method is a top down quality/value process, and not a bottom-up or minimum requirements process. It uses potential capability, and does not address the performance based on minimum requirements. It therefore does not define which past performance information should be given. Companies are allowed to decide themselves which and how many references of completed projects will be turned in for review by the contracting authority. The minimum number of references is 3. If a company doesn’t turn in references, the score will be neutral (5 on the scale of 1 to 10). The past performance scores are evaluated together with the results of filter 2 and 3.
Filter 2: Proposal and Project Assessment Plan

Subsequently companies submit a Price Proposal and two risk submittals, a technical risk and a non-technical risk assessments, and a Value Added plan related to the tendered project. These three plans contain only one to two pages each and allow companies to differentiate themselves based on their expertise rather than marketing information.

The technical risk submittal is used to force vendors to thoroughly understand the technical risk of the project. The technical risk submittal contains the prioritized major technical risks of the project (the risks that are the contractors responsibility) and the capability of the vendor to control these risks.

The Risk Assessment (RA) plan describes the risks that are outside the control and responsibility of the vendor and prioritizes these risks. Furthermore the RA-plan identifies how the vendors will manage and minimize the risks that the contractor does not control.

The Value Added (VA) plan covers items that are options for added value (beyond the scope of the project), such as: faster delivery and better quality. The Value Added plan provides more than the minimum requirements of the contract. The proposed options may fall outside the direct scope of the project but must contribute to the needs and goals of the contracting authority.

Filter 3: Interviews

The company’s key project individuals are interviewed to identify their capabilities to be proactive, minimize the risk that they control and do not control. The key individuals are the critical success factor for high performance. In the interviews individuals are questioned on their past performance, their ability to manage the specific project from beginning to end and how they will implement the company’s RAVA-plan. The interviews are to identify the capability for the key personnel to manage and control risk on the proposed project.

Filter 4: Identification of Potential Best-Value Vendor

All information gathered from filters 1, 2 and 3 (i.e. scores on past performance, the price proposal, evaluation of the RAVA-plan and interviews with key individuals) is imported in a decision making matrix model. The model uses pre-established weights, which are determined by the contracting authority for each project. The outcome is a ranking which puts the highest performing company at number 1. If the best value suppliers’ price is more than a predefined percentage (i.e. 10%) over the price of number 2, the best value tender will not be considered unless there is dominant information that dictates their selection. If there is no dominant information, the next prioritized best value contractor will be selected to go into the pre-award period.

Filter 5: Pre Award Period

In the Pre Award Period the highest prioritized performer will preplan the project in detail and prepare quality and risk control plans (the weekly risk report (WRR) and the risk management
plan (RMP.) The contracting authority and the potential contractor discuss the RAVA plan, the project planning and confirm the contractor’s proposed fixed price. Upon total agreement from both parties, the contract is finally awarded.

*Filter 6: Weekly Risk Reporting System and Final Rating*

Once the award has been made, the contractor submits a weekly report that measures its performance by documenting cost and time deviation from the contractor’s baseline plan. Only risks that impact time or cost are listed in the WRR. By managing and minimizing the deviation of cost and time, the high performance contractor maximizes the value of the project. Upon completion of the project, the contracting authority evaluate the performance of the contractor, and the rating will be incorporated into the PPI database (to be used on all future projects). Each project done in a client’s system is worth 50% of the future performance rating for that particular client. This means that the loop is closed and puts the best value contractor at risk. Adversarial or opportunistic behaviour after the award is punished by a low final ratings.

*BVP-PIPS Filers and European Law*

*Filter 1: Past Performance Information (PPI) and European Law*

Under European law there is a distinction between the selection criteria to select possible suitable contractors that will compete for the project and award criteria to determine most economically advantageous tender (m.e.a.t.). The so-called selection criteria can be divided in:

- mandatory reasons for exclusion as stated in article 45 sub 1 Directive, such as participation in a criminal organization, corruption and money laundering;
- optional reasons for exclusion as stated in article 45 sub 2 Directive, such as bankruptcy, professional misconduct, etc.;
- criteria of economic and financial standing as stated in article 47 Directive;
- criteria of professional and technical knowledge as stated in article 48 Directive;

*Reasons for exclusion*

The Directive gives an exhaustive list of reasons for exclusion. According to article 45.2 sub d, ‘a company that has been guilty of grave professional misconduct proven by any means which the contracting authorities can demonstrate’ can be excluded from tendering for a contract. The burden of proof for grave professional misconducts lies with the contracting authority.

Contracting authorities are free to choose the means of evidence. This means that PPI might be used in this context. However, all selection and award criteria need to be proportional to ensure effective competition. As a result the time of exclusion from tendering must be proportional to the level of poor past performance. Moreover, it is argued by some scholars that companies can only be excluded from tendering after an irreversible verdict comparable to a penal sentence (Pijnacker Hordijk c.s.). It is therefore not without legal complications to use PPI as grounds for total exclusion from tenders.
Personal and technical knowledge

To ensure that tenderers have sufficient technical knowledge contracting authorities can draw up selection criteria that see to a minimum level of technical knowledge. According to article 48 sub 1 Directive the professional and technical abilities of a company should be assessed in accordance with article 48 sub 2 and 3 Directive. Article 48 gives an exhaustive list of means of evidence by which a company’s technical knowledge should be examined. The most commonly used way to examine technical knowledge is ‘references of completed projects’. This is conformity with article 48 sub 2 which states:

Evidence of the economic operators' technical abilities may be furnished by one or more of the following means according to the nature, quantity or importance, and use of the works, supplies or services:
(a) (i) a list of the works carried out over the past five years, accompanied by certificates of satisfactory execution for the most important works. These certificates shall indicate the value, date and site of the works and shall specify whether they were carried out according to the rules of the trade and properly completed. Where appropriate, the competent authority shall submit these certificates to the contracting authority direct;

European (case) law demands that – in order to ensure effective competition - selection criteria should not be disproportional in relation to the project. This means that the requirements for the project that can be used as a reference should not be too strict. Moreover, according to article 48.2 sub a, only references of works carried out in the last five years can be used. This means that unlike the pure BVP-PiPS method companies are not entirely free to select the references they turn in for evaluation.

Furthermore selection criteria should be objective in order to ensure transparency, non-discrimination and equal treatment. This means that contracting authorities should find a way to eliminate the risk of subjectivity in the questionnaires about completed projects.

PPI as a selection or an award criterion?

As stated, in European law there is a distinction between selection and award criteria (See e.g. Cases C-532/06 (Lianakis) en C-199/07 (EC/Greece). Selection criteria see to the suitability of a company to complete a certain project. Award criteria see to awarding the contract to the most economically advantageous tender (m.e.a.t.). This means that selection criteria should in principle regard the tenderer and award criteria should regard the tender (There are however exceptions to this rule, see paragraph ‘Interviews’). Even in an open procedure – where selection and award take place at the same time – this distinction is to be respected. PPI is strongly connected to assessing the suitability of a company. Other than in a ‘pure’ BVP-PiPS procedure, PPI is therefore not be used together with price proposal and RAVA-plan to determine the best performing tenderer (= m.e.a.t.).
Some practical remarks on using PPI

One of the questions that arise when putting PPI in practice, is how to treat companies that are new in the sector, as they can’t provide the contracting authority with relevant PPI scores. The proposed solution in the BVP-PiPS method to score companies without references as ‘neutral’ (5 out of 10) is questionable in fairness and does not improve effective competition. Furthermore it remains the question how groups of companies that submit one tender as a group, should be scored. To meet the requirements of objectiveness and transparency, these questions need to be addressed in the PPI system.

Filter 2: Proposal and Project Assessment Plan and European Law

The offered price and plans to assess quality are a part of the award criteria to determine the most economically advantageous tender (m.e.a.t.). One of the often used m.e.a.t. quality criteria is in fact ‘risk management’. As said, under European law selection and award criteria must meet requirements of transparency. This means that contracting authorities must – at the start of the tender – make clear how all criteria will be evaluated and scored (percentages). It is however important that not all underlying aspects by which a plan is scored are stated in the tender documents. This strategy leaves room for the true expert/visionary to provide dominant information. At the same time, it might be necessary for transparency reasons that contracting authorities that use BVP-PiPS for the first time, educate their tenderers of what is expected so a level playing field is created.

Using the Value Added might cause some legal complications. The options in the Value Added plan can be seen as Variants as described in article 24 Directive. Article 24 states that it must be clear from the start of the tender (in the tender notice) that a contracting authority will allow Variants. Furthermore, the contract documents should describe minimum requirements for the Variants to be met. These minimum requirements make it possible to refuse undesirable Variants. The most complicating factor however is transparency and objectivity. The contracting authority must make clear in the tender documents how Variants and compliant tenders will be evaluated and scored. Furthermore, if a Variant tender turns out to be the m.e.a.t., all documented value added options therein, become (in principle) part of the contract. Only minor changes to the offer can be made after the final tenders are submitted (more information provided under Pre-Award section). This differs from a pure PiPS situation in which the contracting authority is allowed to choose from the proposed options after awarding the tender to the m.e.a.t in the pre-award phase.

Filter 3: Interviews and European Law

Possibilities under European law?

A much debated aspect of BVP-PiPS in Europe is interviewing key individuals. As described selection criteria should only be regarding the tenderer and award criteria should only be regarding the tender (Case of Gebr. Beentjes/ State of the Netherlands (C-31/87)). This means that the basic assumption is that interviewing key individuals should take place as part of the
selection phase. Nevertheless, it can be argued that interviewing key individuals on this specific project and the RAVA-plan is predominantly regarding the tender itself instead of the tenderer.

One of the most important cases about the distinction between selection and award criteria is the case of Lianakis (C-532/06). At first sight the judgment seems to rule out any evaluation of quality of proposed teams in the award phase. Although the award criterion in this case was ‘proven experience of the design team and its leader’, it was evaluated by references of completed projects of the firm. This means that the award criterion was in fact evaluating the tenderer. This is quite different from taking into consideration the individual experience of a particular team proposed and assessing that experience in the light of its relevance to the contract being awarded. It is also quite different from interviewing the proposed team on their understanding of the tender submitted. In the latter cases interviews are mainly regarding the contract or tender, not the tenderers suitability. Furthermore, many authors stress that there can be good reasons for allowing a more flexible approach to the distinction between selection and award criteria (Treumer, 2009; Lee, 2010). This is particularly the case for contracts that are of a complex nature, where the individual quality of team members closely relates to the economic value of the tender (Pijnacker Hordijk et al., Handboek van het Europese en Nederlandse aanbestedingsrecht, p. 444).

Some practical remarks on using Interviews

When a contracting authority decides to use interviews as an award criterion, it should take into account the following points of interest in connection to (the basic principles of) European law:

- using standard questionnaires to ensure equal treatment;
- no negotiations about price or the tender that has been turned in, offers are final.
- thorough documentation of the interviews to ensure transparency.
- Recording the interviews can be helpful in future legal proceedings.

Filter 4: Identification of Potential Best-Value Vendor and European Law

Under European law tenders are awarded to the m.e.a.t. on the basis of pre described award criteria using predetermined weights. This is in conformity with the BVP-PiPS method. However, in BVP-PiPS the best value supplier whose price is more than a pre-defined percentage (i.e. 10%) over the price of number 2, can only be considered for award if there is dominant information that they are the best value. Turning over the best tender (the m.e.a.t.) is only possible under European law when the tender is irregular or unacceptable (as meant in article 30 Directive). Tenders with a price which is 10% higher than the next best tender are not irregular or unacceptable as a rule. It is however possible for a contracting authority to establish a ceiling price. In order to ensure transparency this ceiling price must be stated in the tender documents (Pijnacker Hordijk et al, Handboek van het Europese en Nederlandse aanbestedingsrecht, p. 197).

Filter 5: Pre Award Period and European Law

In the vision of Kashiwagi and the BVP-PiPS, the pre-award phase is the most important phase. In BVP-PiPS, the pre award period is used to identify all risks and concerns and how the contractor will minimize the risks (risk management plan (RMP)). Another purpose is to create
the weekly risk report (WRR) which includes a milestone schedule and the tracking of any cost and time deviations. Upon agreement from both parties, the contract is awarded. The pre award period is therefore a pre contractual phase. The pre award period might be used in different stages of the procurement procedure.

**Before final tenders are submitted**

In a competitive dialogue procedure it is possible to discuss all aspects of the contract and to conduct the procedure in stages so that the number of tenderers is gradually reduced (by evaluating the tenders against pre established, objective criteria). (In open or restricted procedures such a reduction after selection is not possible.) A requirement at reduction is that the number of tenderers should still ensure effective competition. A general rule under European law is that effective competition is ensured with a minimum of three tenderers. Some scholars however argue that there is still effective competition when tendering with two tenderers in the last stages of the competitive dialogue. In exceptional cases, where there is only one appropriate candidate or solution, the contracting authority may even proceed the dialogue phase with one candidate (Competitive Dialogue – Classic Directive, CC/ 2005/04 rev 1 of 5.10.2005, p. 8.). A contracting authority might thus use the last stage of the competitive dialogue procedure as a pre award phase. In open or restricted procedure this is not possible.

**After final tenders are submitted but before the award of the contract**

Under European law contracting authorities are obliged to respect a standstill period between the notification of the award decision to tenderers and the final award of the contract. This standstill period, also known as ‘Alcatel period’ is at least 15 days but might be stretched to use as a pre award phase.

However, in looking at final tenders in a competitive dialogue procedure, contacting authorities can ask to clarify, specify and fine tune to provide additional information, as long as this does not involve changes to the features of the tender (article 29.7 Directive). Recital 31 of the Directive (on the competitive dialogue procedure, but applicable for all procedures) adds that fundamental aspects of the offer should not be changed:

“(...) However this procedure must not be used in such a way as to restrict or distort competition, particularly by altering any fundamental aspects of the offers, or by imposing substantial new requirements on the successful tenderer, or by involving any tenderer other than the one selected as the most economically advantageous.”

The wording of the recital shows that some minor changes are accepted at this stage, as long as fundamental aspects of the offer (price, risk allocation) are not altered. This is different from a pure BVP-PiPS situation, where all aspects of the offer and contract can be altered.

**After the award of the contract**

A contracting authority might also choose to use the first phase after awarding the contract as a pre award phase. In this scenario the contracting authority awards a conditional contract (with suspensive and/or resolutive conditions) to the m.e.a.t. If the pre award phase does not end
satisfactory the contract can be terminated. If and how a contract can be terminated, is not a question of European (procurement) law. Contract law is an issue of national law and will therefore not be discussed any further in this paper.

The question remains if a contracting authority, after terminating a contract, might go back to the number two tenderer and start a new pre award phase. National case law in The Netherlands suggests that this is possible (Case LJN BO 8078, 20 December 2010).

滤波6: 周期性风险报告系统和最终评级

European (procurement) law has no legal implications on this filter. The post-construction rating might conflict with the principles of non-discrimination of first time vendors (see above).

Using BVP-PIPS in Open/Restricted Procedures and the Competitive Dialogue Procedure

In paragraph 2 of this article three different procurement procedures are described. Because of the design of these procedures the BVP-PiPS filters are to be used in different stages of the procedures.

In an open procedure, where selection and award take place at the same time, the BVP-PiPS filters may be used as follows (Figures 4):

![Figure 4. BVP-PiPS: Open Procedure with Simultaneous Selection and Award](image)

In a restricted procedure, where selection and award take place consecutively, the BVP-PiPS filters may be used as follows (Figure 5):
Competitive Dialogue procedures may be designed in different ways, for example as follows (Figure 6):
Conclusion and Implications for Procurement in the European Public Arena

It is possible to use BVP-PiPS under European (procurement) law. However, some compromise is necessary. The main conclusions about the application of the six filters in the European legal system are:

1. PPI can be used in a tender, but should in principle be used as a selection criterion rather than an award criterion.
2. Risk assessment plans are commonly used as an award criterion and cause no problems from a legal perspective. The value added plan should be seen as a variant tender and evaluated as a whole. In principle all options become part of the contract. The format and minimum requirements of the value added plan should be clear from the start of the tender. It is possible to evaluate and score the value adds against the project goals in the same way as the scoring the risk assessment.
3. Interviews can be used as an award criterion, especially in complex projects. However, contracting authorities should take into account the requirements of objectivity and equal treatment.
4. The identification of the best value vendor is possible under European law. Best valued tenders that are 10% over the price of the next best tender, should not be automatically turned over. The impossibility of using the 10%-rule causes a problem when the best value vendor has offered a price that is not competitive. The European rules however do leave room to disqualify unrealistic bids.
5. If the pre contractual period is used before awarding the tender, the main aspects of the contract, such as price and risk allocation should not be discussed. It is also possible to award a conditional contract, case law suggests that if the pre award phase does not end successfully, contracting authorities may award to the number two tenderer.
6. European law has no legal implications on the weekly reporting system and the final rating.

The legal boundaries of the European legislation create some challenges for contracting authority’s procurement officers. First of all, using PPI as a selection criterion instead of an award criterion is a problem which can easily be overcome. PPI can literally be used as a filter, knocking out vendors that do not have good performance ratings. PPI is also the least important filter of the PIPS-process.

The issue of objectivity and equal treatment in interviews can be resolved by a well-designed process of assessment and thorough preparation of the interviews. In the fast-track project and the EDCA-project Rijkswaterstaat has successfully used the interviews due to a meticulously designed assessment process (see van der Rijt et al. and Veenendaal en Witteveen elsewhere in this issue).

The biggest dilemma for contracting authorities in Europe are the legal boundaries facing the pre-award phase. The pre-award phase is the most important phase in the BVP-PIPS process. The first four filters of the BVP-PIPS-process are meant to find the best expert for the project and not for designing an exhaustive risk management plan and preplanning. In the BVP-PIPS process the information asymmetry is dissolved in the pre-award phase, when (only) the best...
value vendor receives all risks and concerns of the contracting authority. Reason for this is minimization of transaction costs.

The consequence of the legal framework is that fundamental negotiations about the scope, the schedule and about the risks have to take place after the award of the contract (Both in the fast-track projects and EDCA the pre-award phase took place after the award of the contract).

Although the pre award phase is not meant to negotiate the price, the lack of competition might cause opportunistic behaviour from the winning vendor. This could result in insufficient preplanning and risk management by the contractor in the absence of incentives (in particular not awarding the final contract).

Possible solutions for this dilemma are:
- disclosing the clients risk register at the start of the tender and/or
- more extensive risk assessment plans (more than two pages)
- the use of a competitive dialogue
- the use of a conditional contract

The first solution is to provide the clients risk register at the start of the tender. This could be combined with a more extensive risk assessment plan, the second solution. The contracting authority usually has a risk register before starting the tender. This risk register is provided to the tenderers at the start of the tender. The tenderers will then have to compete and prioritize the risk register and come up with ways to minimize the risks. Not providing the risk register is counter intuitive and seems to create an unnecessary information asymmetry or lack of transparency. Providing the contracting authorities’ risk register however gives low performers an advantage and high performers an advantage. High performers are more likely to identify risks they do not control than low performers. Low performers are more likely to become the best value vendor. Another problem of more extensive risk management plans is that it raises transaction costs.

This paper shows that the competitive dialogue can be designed to better fit the BVP-PIPS process than the open and restricted procedure. The RAVA plan and interviews can be used to reduce the number of tenderers. The pre award phase can then be completed in the dialogue phase. The competitive dialogue however is restricted to financial and/or complex projects. If a competitive dialogue is not possible or feasible, a contracting authority may choose to award a conditional contract. in the contract are not met.

In the near future Rijkswaterstaat will use the pre award phase in the competitive dialogue. The possibility of using a conditional contract will also be investigated.

Bibliography


Pijnacker Hordijk c.s., *Handboek van het Europese en Nederlandse aanbestedingsrecht*, p. 280.

Rijkswaterstaat toonaangevend opdrachtgever (only in Dutch), 2008

(http://www.pianoo.nl/pv_obj_cache/pv_obj_id_97AE0D76D7EE142A81E4FBBB33879E93C3710000)

Toekomstperspectief Bouwsector, Visie van de ministers van Economische Zaken, van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer en van Verkeer en Waterstaat, p.5,  
(http://www.regieraadbouw.nl/upload/documents/Publicaties/Toekomstperspectief%20voor%20de%20Bouw.pdf)

Legal Perspective: Is Best Value Procurement achievable within the framework of the ARW 2005?

Ramona Apostol*
Corvers Procurement Services BV
Netherlands

This paper discusses the legal implications of using the elements of the Performance Information Procurement System (PIPS) procedure in the Netherlands. The article proposes the pros and cons of the potential compliance of these elements, in the form adopted in a test case with the municipality of ‘s-Hertogenbosch who attempted to meet the requirements of Aanbestedingsreglement Werken1 (hereafter: ARW) 2005. The author proposes that the national restricted procurement with pre-selection prescribed by the ARW 2005 may raise potential issues of interpretation and may therefore be too strict for the efficient application of the elements of the American methodology. Based on the legal discussion of the test case, the author is proposing to choose a more flexible policy for the public works contracts, which can benefit from the application of the American methodology.

*Ramona Apostol is a Legal Procurement Researcher at Corvers Procurement Services BV. Corvers has provided legal advice on the pilot project described in this article, regarding the compliancy of the procurement procedure with the applicable ARW 2005

Background

The practice in the Netherlands with the procurement of public works

In 2001, a fraud scandal in the construction sector unraveled in the Netherlands. It was then determined that private market parties regularly made illegal arrangements regarding the price and the distribution of public contracts and that in consequence, the public authorities paid too much for their works contracts (Van Romburgh 2005). This resulted in an atmosphere of distrust between the private market and the contracting authorities (VNG Editor 2009).

The Final Report of the Dutch Parliamentary Investigation Commission concluded that there was a need for harmonized procurement policy for all public contracts in the construction sector, whether above or below the threshold set by the European Directive 2004/18/EC (the threshold for the application of the Directive 2004/18 is EUR 4,845,000). This initiative translated into the ARW 2005, which extends the application of the procedural requirements of the Directive 2004/18 to the public works contracts below the above mentioned threshold and brings some additions to the European rules for the procurement of public works. (De Bouw uit de schaduw 2002).

1 Aanbestedingsreglement Werken is the Dutch terminology for Procurement Regulations for Public Work contracts.
The major points of ARW 2005

On the one hand, the ARW 2005 was mainly intended to deregulate and simplify the legislative framework by reducing the number of different procurement rules, through the application of one regulatory background for all contracts irrespective of their value (Toekomstperspectief bouwsector 2003). The regulation therefore offers a user-friendly format and avoids excessive references (Arrowsmith 2005). The ARW 2005 is divided between provisions for national procurement procedures (below the threshold) and provisions for the European procurement procedures (which are above the threshold and fall within the scope of the European Directive 2004/18 as implemented into the national legislation Besluit aanbestedingen voor overheden (Bao))\(^2\). The rules for the national procedures almost completely replicate the more rigid rules for the European procurements. By doing that, the ARW 2005 restricts the room for adjusted procedures and for communication with the contractors in procurements falling outside the scope of application of the European Directive (for national procurements).

The restrictive effect of the ARW 2005 is also due to the fact that many public authorities (such as the municipality of ‘s-Hertogenbosch whose pilot project is discussed in this paper), for which the application of the regulation is voluntary, have adopted the ARW 2005 in their procurement policies and are applying it in all their procurements of public works\(^3\).

On the other hand, the ARW 2005 implements the amendments of the latest European Procurement Directive of 2004 and of recent jurisprudence of the European Court of Justice. Moreover, the ARW 2005 introduces a supplement to the European procurement rules, which constitutes a direct effect of the fraud scandal. This is the Model K Declaration, which requires the bidder to declare that his offer was not formulated on the basis of an understanding with (some of) his competitors, as forbidden by the European and Dutch competition rules. The executive(s) of the bidding company must sign the declaration. If the declaration is not submitted or not signed, it leads to the exclusion of the offer from the procurement procedure.

In practice, after 2001, a lack of communication and collaboration between the contractor and the public authority characterized this sector. At the same time, the contracting authorities continued to use detailed technical specifications and to award works contracts on the basis of price to contractors who could guarantee a minimum level of quality. There is though a demonstrated correlation between the price-based procurement methodology and low performance in the construction sector (Butler 2002, Doree 2004, Chong et al. 2007). Kashiwagi proposes that minimum standards when coupled with price based awards continually drive value and quality down and degrade the ability of the construction industry to accomplish meaningful training programs. This causes a constantly diminishing pool of experts who can plan a project from beginning to end with an accurate budget. It also creates a situation where there is no motivation of the less qualified to become fully qualified.

Given this background and despite the expectations of the contracting authorities to obtain high performance, the procurement of works contracts in the Netherlands led to competition on the

---

\(^2\) The European Union knows two main types of legislation: directives and regulation. Regulations are automatically applicable in the member countries, while directives need to be transposed into national legislation in order to be applicable.

\(^3\) The provisions in the ARW 2005 on the European procurement procedures are mandatory on all the public authorities when they procure public works contracts. The provisions on the national procurement procedures are only mandatory for the central government departments.
basis of prices, while contractors offered minimum quality levels in order to maximize their profits.

Moreover, as works projects are often performed in environments which involve multiple stakeholders (for example in urban areas) and their successful completion requires the contractors to communicate effectively with diverse stakeholders and have an adequate level of project management skills, the micromanagement approach adopted by the contracting authorities led to a very reactive, non-responsive approach by contractors causing delays and exceeded budgets. Consequently, works projects often cost the public authorities (the client) more than initially agreed, and often involve a great coordination and control effort by the client’s representatives.

Recent approaches to the procurement of public works

As a reaction to the current practice, there has been a growing interest for improving the performance of the works projects procured by public authorities. At the end of 2003, the Ministries of Economy, Environment and Transport and Public Works detailed the need for changes in the construction sector (Toekomstperspectiev bouwsector 2003). Subsequently, the program Process and System Innovation in the Construction Sector (PSIB) was set up to identify innovative procurement procedures and instruments which lead to improved results in the construction projects, in terms of time, budget and quality. In parallel, the Dutch Ministries created the Knowledge Center for Procurement (PianoO), intended to improve the procurement practice of the Ministries in the construction sector and to promote the accumulated good practice.

Studies carried out within the PSIB program identified some success factors for the procurement of works contracts, including the benefits of evaluating the Past Performance of the bidders and their capacity to manage risks (Jansen et al. 2007, Gunnen op waarde 2007), the need for the allocation of risks to the party most suitable to deal with them (Crama et al. 2004, B van der Veen et al. 2005) and the cost efficiency of detailing the bids only with the winning tenderer (Steenwijk 2005) etc. One of the first programmes within the PSIB analysed three pilot procurements conducted through the best value Performance Information Procurement System (also called PIPS or best value PIPS) and concluded that the application of this methodology can provide added-value if the project is (Muhren and van Duren 2007):

1. Above few hundreds of thousands of euro; AND
2. Fairly complex; AND
3. Concerns construction, installation, delivery and maintenance tasks.

Based on the above mentioned pilot projects and on other studies carried out within the framework of the PsiBouw programme (Bakens et al. 2004, Plantinga 2008) and beyond (Chao-Duivis 2005), an ambitious initiative was taken in 2007 to set up a centralized database which would contain information on the Past Performance of companies in previous public works contracts. Unfortunately, this database is not yet operational\(^4\).

\(^4\) See for more information: [http://www.pianoo.nl/Aanbestedingspraktijk/Past_Performance_in_de_Bouw](http://www.pianoo.nl/Aanbestedingspraktijk/Past_Performance_in_de_Bouw)
Best value PIPS

Best Value PIPS was developed by Professor Dean Kashiwagi, Director of the Performance Based Studies Research Group (PBSRG) at Arizona State University, and has been under testing since 1994 with great success in the US (Hawaii Report 2002). PIPS is based on the Information Measurement Theory (IMT) which states the following:

1. Management, direction, and control of an individual or organization is a sign of inefficiency and increases cost and decreases quality and value. It is much more efficient to identify performers and allow the performers to use their skill to perform the work.
2. An organization has many levels of performance, as they are unable to control their personnel to make them all capable of the same level of performance.
3. It is impossible to efficiently control another entity. When contractors or individuals are controlled and directed, they become reactive, take no accountability for their actions, and cannot become highly skilled, capable of adding value and proactive in their actions.
4. Contractors should measure their own performance and the performance measurements should be used to identify their level of skill or capability to perform.

Test case with the municipality of ‘s-Hertogenbosch

In practice, several public authorities started to apply elements of the best value PIPS in their procurement procedures in order to identify added value and to ensure a greater predictability of a qualitative result of their works projects (s-Hertogenbosch weegt verleden mee 2009).

One of them is the municipality of ‘s-Hertogenbosch, who decided to change its approach to the procurement of works contracts. It decided to capitalize on the knowledge and capability of the private market in order to increase the level of performance in works projects. Thus, the municipality intends to focus more on the quality of the offers and of the contractors and less on the price. At the same time, the municipality intended to minimize direction and control such as to allow the contractors room for innovation and creativity, to stimulate them to adopt a collaborative approach and to direct their efforts towards finding solutions for unexpected problems during the execution of the contract (Koenen 2009).

To this end, the municipality decided to adopt a Best Value Procurement method based on the best value Performance Information Procurement System (PIPS). Three elements of this methodology were identified by the municipality as crucial to ensure the successful execution of the works contracts: Past Performance Information, Interviews with the key personnel and the Pre-Contractual detailing of the value-added plan and of the risk assessment with the best scoring tenderer.

The municipality decided in 2008 to put this procedure into practice in a pilot procurement of the design, installation and management of retention settling tank (a subterranean tank for the temporarily storage of sewage water). The project entails several complex aspects, such as the need to protect the trees and the foundations of the houses in the surrounding area. Moreover, the project will be executed in an urban area and will therefore require efficient communication with
the local population. These aspects increase the risks for the successful realization of the project and make the project suitable for the application of the above mentioned procedure.

The pilot project chosen by the municipality for the application of this procedure, has a value under the threshold and does not require the application of the European procedures. This means that the municipality would be allowed more discretion in adjusting the procurement procedure in order to introduce the above mentioned elements. However, the municipality was obliged by internal policies to apply the ARW 2005 and moreover did not want to create a new procedure, as permitted by the experimental provision of art.11.1, ARW 2005. As a consequence, the municipality faced the challenge to fit the elements of the PIPS methodology into the legal framework of the national restricted procedure with pre-selection as prescribed by ARW 2005, without diminishing the positive impact of PIPS on the results of the project.

This paper begins by describing the PIPS methodology, as well as the US federal legislative provisions in the context of which the methodology is applied, and underlines the main differences with the legal framework applicable in our target project. Because the ARW 2005 prescribes procedures which do not substantially differ from the procedures prescribed by the Directive 2004/18/EC, references to the European legal framework will encompass the ARW 2005.

Subsequently, the paper describes how the municipality of ‘s-Hertogenbosch intends to adapt the elements of this procedure to its project in order to stay in compliance with the ARW 2005. In this context, the author draws conclusions on the compatibility of the elements introduced in this pilot project with the ARW 2005 chosen procedure, and questions the efficiency of the elements of ARW 2005 in their perceived modified form. The argument is proposed that the legal framework imposed by the ARW 2005 may be too strict for the efficient application of the elements of the American PIPS methodology. Based on the results of this pilot project, the municipality may need to choose for a more flexible policy for the works contracts under the threshold.

**Terminology**

This paper uses the European terminology for public procurements. The selection phase in Europe corresponds with the pre-qualification in the US, while the award phase defines the selection of the winning bid in the US.

**The Best Value Procurement in the US**

*Performance Information Procurement System (PIPS)*

PIPS represented the major inspiration for the municipality ‘s-Hertogenbosch to attempt to fine-tune its procurement methods. This methodology was developed by Professor Kashiwagi as an alternative to the award of construction projects in the US on the basis of lowest price and according to management, direction, and control technique of detailed specifications method, which led to construction projects not being delivered on time and within budget. Best Value
PIPS was developed within the Performance Based Studies Research Group (PBSRG), a non-profit research group at Arizona State University. Since 1994, the PBSRG has applied this method in different public and private organizations.

PIPS is based on the premise that the most successful execution of projects is realized when the contractor is put at the “center of the universe” (Sullivan et al. 2007). This presupposes that the contractor is the expert and he should be allowed to evaluate the price and duration of a project based on the desired outcome of the project, and not on detailed specifications. Moreover, the contractor will deliver the best performance when he is put in control of the execution of the project, and required to identify, manage and minimize the technical risks. For these reasons, even though PIPS can be used in design-bid-build (DBB) projects, it is most efficient and effective in such contracts as design-build, construction management at risk, indefinite delivery, indefinite quantity, and design-build-operate, private-public partnerships.

On the one side, PIPS works as an instrument to improve efficiency in a procuring organization, as well as its capability to award to the best value contractors. On the other side, it uses measurement and accountability systems to instill in the contractor’s organization a culture of preplanning, risk identification and mitigation, along with performance and continuous improvement.

PIPS is divided between six so-called ‘filters’ which are applied gradually to select the best contractor for the project (Chong et al. 2009):

1. Past Performance Information;
2. Proposal & RAVA Plan (Risk Assessment Plan and Value Added Plan);
3. Interviews with the key personnel of the bidder;
4. Prioritization (or identification of the best value);
5. Pre-Planning Phase (which includes the setting up of the risk management plan (RMP));
6. Weekly Risk Report (WRR) and the performance metrics used during and after the project.

Within PIPS, the element of Past Performance plays an important role in setting the environment of performance and measurement. Contractors in the United States have stated that their performance record is very critical to their approach to contracting. Past Performance of the main contractor and of the key personnel (the project manager, the superintendent, etc.) is considered the best indicator of the capacity to complete the project successfully (Chong et al. 2009). But the RAVA plan and the interviews play, in practice, a much more significant role than past performance in ensuring performance on the specific project being awarded.

The risk assessment and the value added plan, which are required from the bidders as part of their proposal, constitute a critical filter. The risk assessment plan does not only require the contractors to identify the technical risks which fall under their sphere of control, but most importantly it requires the contractors to show that they are capable of identifying the risks that are outside of their control, and of indicating how they will manage and minimize these risks. This approach leads to a complete plan to deliver the project, as the expert contractors can more accurately identify the initial conditions of the project, including the client’s constraints and risks.
of the local population (Kashiwagi 2008). Moreover, the risk assessment offers the possibility to the participating companies to distinguish themselves by identifying specific risks in the current project and by indicating how they will manage and minimize these risks. In the value added plan, the contractor identifies modalities to make the project even more efficient (in terms of quality, time or costs). On the basis of this rationale, the estimation of the scope and cost of the project is left to the contractor. The contractor may sometimes come up with a higher cost estimation than the budget of the client, based on objective justifications. In such cases, the client may decide at the pre-award stage to reduce the scope of the contract, to increase the budget, to share some of the risks or to modify some aspects of the solution.

At the award stage (selection stage in the U.S.), PIPS provides for interviews of the key project personnel of the bidders, as a double check of their Past Performance record. Once the winning contractor is identified he will refine his proposal in collaboration with the procuring authority and put together a Risk Management Plan (RMP) on the measures adopted or proposed to minimize technical risks during the execution of the project. Subsequently, during the execution of the contract, the contractor delivers weekly risk reports (WRR) on the occurred risks (whether foreseen or unforeseen) with the accompanying cost and time deviation. The contracting authority monitors the performance of the contractor using the WRR and benchmarks/rates it at the end of the project (Kashiwagi 2004). The creation of databases of Past Performance Information, which may be used by contracting authorities in their future procurement procedures, constitutes a major stimulus for the contractors to perform at high levels of quality, in order not to minimize their opportunity to win future contracts.

The Federal Acquisition Regulation (FAR)

Although the US federal legislation for public procurement initially focused on avoiding any corrupt practices, and to this end, prescribed the award of contracts on the basis of price, the concept of ‘best value’ gained ground and in 1997, and the Best Value Procurement method was legislated at federal level. The FAR provides for the use of the lowest responsible bidder method when the subject matter of the procurement is capable of exact specification, and of the Best Value method when the opposite holds true (FAR 15.101 2010). In the procurement of construction contracts, the FAR recommends sealed bids (based solely on price.) However, if the use of sealed bids cannot effectively deliver the best value, the contracting authority may apply other award criteria than price (FAR 36.103b and 6.04(b)(1) 2010).

There are some major differences between the FAR and the European legal framework for public procurement (FAR 1.102-4 (e) 2010). Most importantly, the current FAR specifically allows greater flexibility to the public authorities than the European legislation. For example, FAR allows the public authority to apply a different procedure than the ones outlined therein, if it is in the best interest of the Government. Moreover, the FAR encourages contracting officers to take the lead in encouraging business process innovations (FAR 2010). In addition, the contracting authority is allowed more leeway in gathering detailed information about the bidders and communicates with them during the procurement.

PIPS was one of the first applications of the concept of the best value procurement in the US. After the amendment of the FAR in 1997, PIPS has been brought in compliance with the federal
legislation. Two of the PIPS elements, namely the Past Performance and the Oral Presentation are addressed in the FAR.

The past performance criteria

The Past Performance criterion is envisaged by FAR as a way to identify the quality of the work executed in previous projects (FAR 8.405-1(c)(3)(i), 12.206, 13.106, Subpart 15.3 2010). This is considered especially important in the case of negotiated procedures (source selection procedures) and is made therefore mandatory for these procedures when above a certain threshold (FAR 15.304(c)(3)(i) 2010). For these procedures, the FAR allows the public agency to consider relevant Past Performance of the predecessor company, of key personnel, of subcontractors, in relation to the portion or type of effort that each company will perform within the present contract (FAR 15.305(a)(2)(ii)-(iii) 2010).

The European legal framework allows in principle the consideration of the experience of subcontractors only when the bidder relies on the experience of the subcontractor in the respective procurement procedure. Moreover, the evaluation of the past experience of the key personnel of the main contractor is not allowed (see section 3 (b)(i)) (ECJ 1982, ECJ 2000).

Another major difference between the two systems is the moment of evaluation of the past performance criteria. European legislation and case law distinguish between the selection (pre-qualification in the U.S.) and the award phases (selection phase in the U.S.) and prescribe the evaluation of the experience of the contractor at the selection phase. This implies that within the European legal framework, a bidder cannot compensate for weaker Past Performance with a lower price (Chao-Duivis 2005). The FAR, on the other hand, does not make such a distinction and the past performance may be evaluated at the award stage. The practice shows though that most procuring authorities in the U.S. use past performance only as a prequalification, and not to give contractors the competitive advantage at the award stage.

Past Performance under the FAR may be required from the bidders or may be collected by the procuring authority through tapping existing databases such as Past Performance Information Retrieval System (PPIRS), and by using questionnaires, telephone interviews, and site visits (Guide to Collection 2003). A major difference with PIPS and other best value processes, is that PIPS:

1. Allows the vendors to select their own references for past performance of both their company and critical components.
2. Uses the PPIRS as a prequalification, go/no go, and the vendor’s selected past performance as a award criteria.

Unlike in the Netherlands and in Europe, a contractor’s performance in construction projects must be evaluated and recorded in the US for all public contracts exceeding a certain threshold (FAR 42.1502 and 36.201 2010). The selection team may supplement the information provided by the bidders with questionnaires addressed to the references indicated by the bidder (Guide to Collection 2003). Thus, a common approach is to conclude by calling those who respond to the questionnaires with pertinent information in order to obtain more detail or clarification. The best
practice is to contact the references who have the most relevant experience with the contract, such as the Contracting Officer or the Program Manager.

The oral presentations

The Federal Acquisition Regulation allows oral presentations during the competitive negotiated procedures (FAR 15.102 2010) or in indefinite-delivery contracts (FAR 16.505 2010). Thus, part of the proposal may be submitted through oral presentations. Information pertaining to areas such as an offeror’s capability, Past Performance, work plans or approaches, staffing resources, transition plans, or sample tasks (or other types of tests) are considered suitable for oral presentations.

The contract documents still need to indicate which elements will have to be presented through presentations and the evaluation factors. The contract documentation will also indicate the scope and content of exchanges that may occur between the Government’s participants and the offeror’s representatives as part of the oral presentations, including whether or not negotiations will be permitted (FAR 15.306(d) 2010).

Against the need for the purchasing authorities to achieve efficient procurements, oral presentations have emerged in the US as one solution to saving time, staff resources, and money. Moreover, the use of oral presentations is considered advantageous as they often better convey technical and management information. The use of oral presentation in the US is also an opportunity for dialogue among the parties and for the contracting authority to evaluate the capabilities, experience and quality of the key personnel, which will be in charge of managing the desired works project. Oral presentations are considered most successful when the technical and management information requested is neither voluminous nor highly complex, as well as where the offeror's qualifications to perform the work, or the offeror's understanding of the requirement, are the prime evaluation criteria (Procurement Executives Association 2010).

In the US, significant improvements in acquisition lead times and resource savings have been reported by the agencies using oral presentation techniques (Chao-Duivis 2005).

The Application of Best Value PIPS in the Current Pilot Project

Business Rationale of the Municipality’s Choices and Manner of Application

The business rationale behind the municipality’s decision to apply the elements of PIPS is to enhance the capability to identify the right contractor, who will execute the contract on time, within budget and at the expected qualitative standards. The municipality did not want to create a new procurement procedure, but intends to apply the national restricted procedure of the ARW 2005. Therefore, the objective is to apply the criteria of Past Performance, the interviews and the pre-contractual detailing of the value-added plan and of the risk assessment within the legal framework of the ARW 2005 national restricted procedure with pre-selection. The project will be awarded under a fixed budget, and quality will weigh 70% at the award phase. The declared
objective of the municipality is to obtain the highest level of quality within the available budget (Selectieleidraad Gemeente ’s-Hertogenbosch 2009).

The municipality is keen on applying the previously identified criteria for the following reasons. First the Past Performance has an added value as compared to the analysis of the technical experience. The fact that a contractor is able to show that it has experience with building similar works does not necessarily say something about the level of quality with which it is able to do so. Therefore, the use of the Past Performance criteria would enhance the potential of the municipality to identify the most qualitative tenderer. The candidates are required to identify three similar projects they have completed during the last 5 years and detail how they have managed certain difficult aspects during the projects. In addition, the candidates are requested to ensure that the same prior clients of the referenced projects fill out a performance questionnaire.

The evaluation of the anonymous information regarding the Past Performance is done by the Selection Commission members independently, and after the Core Team has ensured that the information on Past Performance are sufficiently anonymous. After the Core Team has tested the completeness of the information submitted by the candidates, compliance with the exclusion and selection criteria and with the minimum criteria regarding the financial and economic standing and professional ability are also considered. The Selection Commission is subsequently responsible for conducting the Past Performance evaluation to determine the best five candidates, who will be invited to make an offer. This evaluation methodology is meant to enhance the objectivity of the evaluation (Chao-Duivis 2005).

The municipality will not supplement the questionnaires with telephone or email interviews with the relevant personnel of the previous clients, although contact with the references has the advantage of completing or confirming the information regarding the candidates’ past performance. This aspect may need to be considered by the municipality in a future procedure.

Second, the municipality chose to conduct Interviews with the contractors and score them at the award stage. The criteria Interview will not be applied in the same way as in PIPS, but in an adapted form in order to comply with the requirements of the ARW 2005. Thus, the interviews will not be used to evaluate the quality of the key personnel, but will take the form of an oral presentation of portions of the offer (in our case, the quality of the management of the project). Nevertheless, the interviews will be conducted with the personnel in charge of executing the project and the intention of the municipality is to get a glimpse at the managerial qualities of these individuals. The municipality intends to pay special attention to the distinction between the criteria, which are allowed to be evaluated at the selection stage and the elements suitable to be evaluated at the award stage. Therefore, the interviews will not require information about the qualities of the tenderer, but will refer to the manner of executing/managing the project being considered. Furthermore, the information submitted through interviews will differ from the written portions of the proposals and the questions to be asked during the interview will be made available to all the parties in advance.

Finally, the detailing of the value-added plan and of the risk assessment is done only with the best scoring bidder before the definitive award decision, and aims to minimize the administrative burden for the other participating companies and for the municipality. The contracting authority
intends to apply extra caution not to enter into negotiations and to limit itself to the detailing of the planning and of the risk assessment within the framework of the award documentation. This accomplishes some of the same purpose of the pre-award period in the PIPS process, which requires only the best value contractor to detail their proposal prior to signing the contract.

**BVP elements – Compatible with the ARW 2005?**

The applicable legal framework sets limitations on the application of the PIPS elements. The chosen national restricted procedure with pre-selection of ARW 2005 leaves limited room for deviations from its prescribed stages and criteria, as the ARW 2005 national restricted procedure does not significantly deviate from the European rules. In this context, national as well as European jurisprudence is relevant.

**Past performance**

Of the three elements of PIPS chosen by the municipality, the weighing of Past Performance in the selection phase is the least problematic from a legal point of view (Chao-Duivis 2005). Thus, according to article 3.9 of the ARW 2005, the contracting authority is allowed to require as proof of the technical capability of the candidates a list of relevant works executed by the candidate company in the past 5 years. In addition, the contracting authority is allowed to request different certificates and other proof that show that the previous projects were executed in a qualitative manner and within the budget and the time framework. Arguably, the description of several aspects of the previous projects by the candidates and the performance questionnaires fall within the allowed proof.

According to European jurisprudence, the contracting authority is also free to decide the method of evaluation in the selection phase, provided that it is described in the announcement of the procurement or in the contract documents (ECJ 470/99 2002). Thus, the method chosen by the municipality to rank the candidates on the basis of their Past Performance after they have been checked against the exclusion and other minimum criteria is compliant with the European rules.

**Interviews**

The use of interviews for the evaluation of the ‘quality of management’ criteria remains the most risky claim, because the chosen ARW 2005 procedure leaves little room for communication with the candidates/bidders and imposes the same strict distinction between the selection and the award stage/criteria as the European restricted procedure with pre-selection.

For one, art. 3.18 and 3.28 of ARW 2005 make clear that the direct communication with the bidders is in principle only allowed with the scope of clarification of the offers.

Additionally, the European jurisprudence makes clear that the selection phase regards the capability of the bidder to execute the contract and the award stage regards the quality and price of the bid (HvJ EGC-532/06 2008). In consequence, the municipality is not allowed in principle

---

5 The application of the Best value PIPS in the US encounter the same hurdle, as the FAR imposes the same obligation as the ARW 2005 to refrain from negotiations at this stage and makes it very clear that only clarifications are allowed.
to evaluate at the award stage the qualities of the key personnel of the bidder, in a written form or through interviews.

The rationale behind these legal restrictions lies in the premise that an individual may not be available for a specific project and that the procurement decision based on individuals does not sufficiently guarantee the necessary objectivity. Therefore, the European legal framework focuses more on the quality processes within a company, such as the manner to deal with risks, with quality guarantees, communication, etc (Jansen et al. 2007, Gunnen op waarde 2007).

Nevertheless, in this article, the proposal is being made that the individual experience and qualities of individuals are considered by public authorities and contractors in certain types of contracts crucial and are evaluated by contracting authorities regularly in the procurements of services or works, mostly in the form of presentations (Chao-Duivis 2008).

The national jurisprudence indicates that the contracting authority is allowed to evaluate the qualities of the bidder through presentations (can be comparable to Interviews) at the award stage, when the procurement procedures escapes the application of the European rules for public procurement and of the national rules, such as the ARW 2005 (Vrz Rb Rotterdam 2006, Presentatie als gunningscriterium 2008). In these cases, the contracting authority still needs to demonstrate the existence of ‘special circumstances’ due to which the personal qualities of the company’s personnel play such a crucial role that they need to be weighed at the award phase (Vrz Rb Maastricht 2006). Having a direct relationship to the objective of the contract is equally important for the criteria as the basis for which the presentations are evaluated (Vrz Rb ‘s-Gravenhage 2006).

In conclusion, because the national restricted procedure of the ARW 2005 is applicable to the pilot projects analyzed herein, the municipality is not allowed in principle, to communicate with the offerors except with the objective of clarification of the offer and it is not allowed to evaluate the qualities of the key personnel at the award stage. As formulated in the contract documentation, the ‘quality of management’ criteria regards the offer. It can be argued that, conducted in this form, the interview criterion is legally compliant. It will still offer the opportunity to the public authority to evaluate the quality of the personnel within the ‘quality of the management’ criteria, as the two aspects are intrinsically intertwined.

In any case, this paper proposes that the municipality should consider the adoption of more flexible procurement procedures for construction contracts falling under the threshold of the European Directive, than the procedures prescribed by the ARW 2005. In such a case, the municipality would have more flexibility to tailor the procurement to the needs of the project and apply elements of Best Value Procurement.

Pre-contractual phase

At the pre-contractual phase two aspects raise legal compliancy questions: direct communication with the bidder and the discussion of the terms of the offer.
Regarding the first aspect, the national jurisprudence indicates that communication with the best scoring bidder with the objective of detailing the content of the contract is in principle allowed, provided that this step is clearly explained in the contract documents, in accordance with the transparency principle (Vzr. Rb. Groningen 2004).

Regarding the second aspect, the EC principle of equal treatment, which in national procurement procedure is applicable through the principles of reasonable administration and of pre-contractual bona fides, does not allow the modification of the contractual clauses before the final award.

Thus, the pre-contractual phase used by the municipality to detail the value-added plan and the risk assessment should not change any essential or material elements of the bid, which –if known in advance- could have triggered the bidders to submit a substantively different proposal (HvJ EG 496/99 2004). The European jurisprudence confirms that the contracting authority needs to comply with the criteria it has formulated itself, until the end of the procurement procedure. A substantial change (such as the price) would be in breach of the principles of equal treatment and transparency, as these criteria will not be applied uniformly and objectively anymore (HvJ EG 454/06 2008). Thus, the municipality does not have the possibility to adjust the price of the contract, as sometimes is recommended by the best value PIPS structure to consider the value added items which are outside of the scope or requirement.

In practice, the pre-contractual communication with the winning bidders is usual. It is meant to check whether the parties are on the same line and when sufficient guarantees are put in place, it does not breach the general principles of procurement (Chao-Duivis 2008).

**Conclusion**

In the current project, the municipality intended to enhance its procurement practice, while at the same time stay in compliance with the national restricted procedure of the ARW 2005.

Both objectives were reached. The pilot project is at this moment finalized and the introduction in the procurement procedure of the Best Value PIPS elements discussed above, delivered the expected results. The selection team indicated that the interviews with the bidders were especially helpful in choosing the best contractor, who finalized the project within the expected quality levels.

The question of whether a paradigm shift was produced within the procurement practice of the municipality remains open. The municipality chose not to benchmark the performance of the contractors in the current project. This is an important pillar of the best value procurement in the US and a strong motivation for the contractors to improve performance at high levels of quality such as not to diminish their chances to win future contracts.

Regarding the question of legal compliancy, the use of Interviews at the award stage remains the most exposed aspect to legal claims. The national jurisprudence is not uniform regarding the use of presentations (whether regarding the bid or the qualities of the bidder) and the ECJ has not
shed light on this aspect yet. In order to limit the risk of legal claims, the municipality of ‘s-Hertogenbosch applies the Interview criteria in a modified form, under the name of ‘quality of management’. In practice though, the municipality will consider the capability of the key personnel to manage the project in question, as demonstrated during this Interviews. This criterion has substantial added value in construction projects and as applied in this project, could be considered compliant with the ARW 2005. In practice, contracting authorities often evaluate the experience of the individual personnel at the selection phase (by requiring CVs), and they also observe the qualities of the individuals, during the legally permitted instances of interaction, such as the clarification of certain aspects of the offer. Subsequently, the impression made by the individual personnel during these interactions is reflected into the evaluation of the offer. Particularly in projects procured on the basis of functional/performance-based specifications, contracting authorities feel a legitimate need to communicate with the bidders (Mühren and Duren 2007).

In most construction projects, the quality of the leading employees is crucial for the success of the project. The applicability of the ARW 2005 for projects such as the one discussed in this paper restricts the freedom of the procuring authority to enhance its procurement procedure according to its needs. For this reason, the municipality of ‘s-Hertogenbosch should consider following more flexible procurement procedures than those prescribed by the ARW 2005, for contracts with a value beneath the threshold.

References


Eindrapport Parlementaire Enquêtecommissie Bouwnijverheid, Kamerstukken II 2002-2003, 28244, nrs.5-6, p.297


‘Gunnen op waarde’ (2007) Gunnen op waarde. PSIB.


HvJ EG (2008) zaak C-532/06 (Lianakis), 21 januari 2008, r.o. 30


Best Value at the Directorate-General for Public Works and Water Management in The Netherlands: A Case Study of the Procurement of Infrastructure Projects Worth $1,200M

Jeroen van de Rijt
Scenter Management Consultants
e-mail: rijt@scenter.nl

Wiebe Witteveen and Carlita Vis
Rijkswaterstaat / Directorate-General for Public Works and Water Management
e-mail: wiebe.witteveen@rws.nl
e-mail: carlita.vis@rws.nl

Sicco Santema
Scenter Management Consultants
e-mail: santema@scenter.nl

Rijkswaterstaat, part of the Dutch Ministry of Infrastructure and Environment has used the best value PIPS philosophy to procure infrastructure projects worth circa $800M. This is a case study of the largest PIPS pilot project in the sixteen year development of the best value PIPS, and tests the robustness of the PIPS philosophy within the constraints of the European law. Eleven adaptations to the original methodology are outlined and discussed. The procurement results of six tenders are outlined. (This paper is an updated version of the paper as published in the Conference Proceedings of the CIB 2010 Manchester Conference (May 2010))

Keywords: Best Value Procurement, the Netherlands, PIPS, Rijkswaterstaat

Introduction

Rijkswaterstaat is the government agency whose role is the practical execution of the public works and water management, including the construction and maintenance of waterways and roads in The Netherlands. It is part of the Dutch Ministry of Infrastructure and Environment. Rijkswaterstaat is using the philosophy to procure infrastructure projects worth circa $800M. This paper reflects on the use of PIPS within this project, the world’s largest and most aggressive PIPS pilot. The structure of the paper is as follows. First, Rijkswaterstaat as an organization is described. Then the background of the program is provided. Next, the set up of the process is described. Then differences of the application of the philosophy within Rijkswaterstaat (in comparison to the “pure” PIPS process as developed by Dean Kashiwagi; (Kashiwagi, 2009)) are outlined. This is followed by a description of the results of the procurement phase of the projects. The paper finishes with a summary and conclusions.
Introduction to Rijkswaterstaat

Rijkswaterstaat is the executive arm of the Dutch Ministry Infrastructure and Environment. On behalf of the Minister and State Secretary, Rijkswaterstaat is responsible for the design, construction, management and maintenance of the main infrastructure facilities in the Netherlands. Rijkswaterstaat manages the country’s main road network, main waterway network and main water systems. It is responsible not only for the technical condition of the infrastructure but also, and especially, for its user friendliness. It facilitates the smooth and safe flow of traffic, keeps the national water system safe, clean and user-friendly and protects the country against flooding.

Rijkswaterstaat has changed dramatically since 2003. In accordance with the Business Plan Rijkswaterstaat introduced in 2004 the organisation has been transformed into a public-oriented government organisation that concentrates on its tasks as network manager. As part of the Business Plan Rijkswaterstaat issued Agenda 2012 in 2008 to continue this process in the next four years. The goal is to become a leading sustainable and public-oriented executive arm of government by 2012.

Background of the program

The road network in the Netherlands (specifically the Randstad area) is heavily congested, with unreliable journey times of one in five during the rush hour. Most of the traffic jams in the Netherlands (81% in 2005) are concentrated in The Randstad. (The Randstad (a city at the edge of a circle, with empty space in the centre) is a conurbation in the Netherlands. It consists of the four largest Dutch cities (Amsterdam, Rotterdam, The Hague and Utrecht), and the surrounding areas. Its 7.5 million inhabitants make up almost half of the population of the Netherlands). Source: Wikipedia.) In the Netherlands there are extensive procedures preceding road construction. The average lead-time from idea to new road is over 20 years (!). A law was passed called ‘Besluitvorming Versnelling Wegprojecten” (translated: “Decision for Accelerated Road projects”). This law simplifies some public procedures concerning environmental issues for 30 specific road bottlenecks starting January 1st, 2009. This enables Rijkswaterstaat to take some quick measures to enlarge highway capacity and reduce congestion on several locations on the Dutch road network. The Dutch Ministry of Infrastructure and Environment has identified 30 major bottlenecks, which need to be (partly) resolved by May 1, 2011.

The procurement strategy focused primarily on the acceleration of the delivery of the projects. Rijkwaterstaat has developed a shorter tender procedure than the traditional way of tendering road projects. The second goal of the strategy was to maintain enough competitors for the projects. Another goal of the procurement strategy was to optimize price and quality (best value). The main reason for using the Best Value Procurement/Performance Information Procurement System (BVP/PIPS) is that the procurement of Design and Build-contracts usually leads to high transaction costs (efforts of all possible suppliers) and long tender procedures. In 2009 the tender capacity in the Dutch market was limited. Therefore suppliers have asked Rijkswaterstaat to develop a procurement strategy heavily based on quality (most economically advantageous
tender (MEAT)) to lower the transaction costs and shorten the tender procedure. As a government agency Rijkswaterstaat has to follow the European legislation on public works.

Rijkswaterstaat has adopted BVP/PIPS for 16 of the 30 bottleneck projects to tackle this issue. In order to resolve the congestion on the highways as soon as possible, the tender process starts before the right-of-way plans (spatial planning) are final. When a draft right-of-way plan is published, stakeholders must approve and agree on legality. In case of environmental issues (noise or pollution) stakeholders can object (appeal) to the road widening. This means that the exact moment that the contractor can start the actual execution of the project is unsure. Appeals may delay the start for half a year or more. Nevertheless the parallel procedures of spatial planning and procurement will contribute to acceleration of a majority of these ‘fast track’ projects.

As speed and quality is of the utmost importance, the BVP/PIPS will be used to select the best suppliers who will do the infrastructural work for 16 selected projects (typical work: asphalting, making acoustic screens, road signs and signals, lighting, adding extra lanes next to existing lanes, renovating bridges, gantry sign / overhead traffic sign, etc). The 16 projects have been divided into 6 clusters. For each of these clusters the Best Value Procurement process has been used.

The precise scope of the clusters was not yet completely defined at the start of the procurement. Because of the importance of speed Rijkswaterstaat will award the project to the supplier that best understands the project and the proposal from beginning to end. Rijkswaterstaat will work out all further details with that supplier (the actual design & realization). This methodology has some advantages: it turns up the speed and it minimizes transaction costs for all suppliers. Only
the best value vendor does the detailed preplanning and scope definition work (technical aspects).

Rijkswaterstaat has set up 6 project teams that have used the Best Value Procurement process for “their” cluster. Next to the six project teams there is an overall procurement team (a “core group”) that monitors and coaches the individual teams (authors work for this central core group).

Set Up of the Process

While designing the process, the goal was to stay as close to the original PIPS methodology (as developed by Dean Kashiwagi) as possible, with a few adaptations. In this section the differences between the methodology used in the fast-track project and the “pure” PIPS methodology are described. The differences with the optimized PIPS methodology are outlined as well as why changes were made. The following points will be described:

- Preparation phase
- Procurement phase
  - Past Performance Information
  - RAVA plan (Risk Assessment / Value Added plan)
  - Planning
  - Interview
  - Ranking
- Pre-award phase
- Execution phase

Preparation phase

As normal in Best Value Procurement, the client and the vendors were extensively educated in the paradigms of the philosophy. The paradigm includes:

1. Minimized decision making by the client/buyer.
2. Transfer of risk and control to the vendors.
3. Client does quality assurance (QA), vendors do quality control (QC) and risk management (RM).
4. The client does minimal communication, directions, questions and answers, of the technical requirements to the projects.

A difference during the preparation phase with the “pure methodology” was setting up so called “consultation sessions” or “Intelligence meetings” with each of the individual companies during the tender. In these sessions (2 sessions of 4 hours for each of the companies) the companies had the opportunity to ask questions to the client. The use of “consultation sessions” is standard procedure in The Netherlands when dealing with projects of this size. It gives the vendors an opportunity to find out the risks and concerns of the client (amongst other things). Of course, with the use of BVP it did not seem very logical to talk about risks and concerns of the client (that would be dealt with in the RAVA plan!). Still, it seemed a good idea to have these individual sessions (certainly from an “involvement” point of view; if there were no consultation...
sessions, the vendors would not know what to expect). The consultation sessions were also used to, once again, delve further into the philosophy.

**Difference # 1: use of “consultation sessions”, where vendors could ask for more information on the project in an individual setting**

**Procurement phase**

The intention was to copy the procurement phase as much as possible from the pure PIPS methodology. Award criteria were pricing, risk assessment and value added (RAVA) plans, schedule (planning) and interviews. Still, some changes were made. Below the most important differences are highlighted.

**Past Performance**

First of all Past Performance Information (PPI) was not used. Although the use of PPI has been discussed in The Netherlands for numerous years, no system is “in place” to use PPI. There have been supporters and opponents of PPI. Given the ongoing discussion, it did not seem “wise” to use PPI in this important program of fast-track projects. Instead of using PPI, pre-qualification was used. All interested parties could express an interest in tendering for the contract but only those meeting the selection criteria of Rijkswaterstaat were actually invited to do so. This is the so-called “Restricted Procedure” within European tender regulations. Under the Restricted Procedure any supplier may request to participate (stage 1) in an advertised tender. However only those invited/shortlisted (stage 2) by the client (in this case Rijkswaterstaat) may actually submit a tender. New suppliers cannot be introduced at stage 2.

This restricted procedure led to the following results (See Table 1)(number of bids per cluster):

Table 1

<table>
<thead>
<tr>
<th>Number of Bidders per Cluster</th>
<th>Cluster</th>
<th># bids</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

The consequence of using pre-qualification is that vendors are either “in” or “out”. There is no differentiation between the vendors in the final ranking (like with PPI, which usually counts for 5% in the final ranking). Under European law, award criteria cannot include selection criteria (i.e. financial standing, technical or professional ability).

**Difference # 2: pre-qualification instead of Past Performance Information. This rules out using PPI as an award criterion. PPI can only be used as a qualification criterion.**
RAVA plan

The use of the Risk Assessment / Value Added (RAVA) plan led to some differences compared with the original methodology of Dean Kashiwagi. The first difference is that Value Adds were only allowed as long as the vendors price (including value adds) was below the pre-defined budget ceiling. The rationale behind this was a strict judicial one. Lawyers from the Ministry argued that you cannot allow “options” in a bid: the proposed options needed to be part of the contract (see Van Leeuwen in this Special Issue). The argument is that once you select a vendor and do not make use of the proposed options (e.g.: in hindsight these options are of “no value”), it could have made a difference in the ranking/ the ranking might have been different in hindsight. The second-ranked vendor could have won the bid.

Difference # 3: only no-cost Value Adds were allowed in the RAVA plan

A slight modification in the use of the RAVA plan was made to assess the Risk Assessment independently from the Value Added plan. In the original methodology each team member gives one overall grade to a RAVA plan.

Difference # 4: assessing the Risk Assessment independently from the Value Added plan

Schedule / Planning

The second criterion to rank the pre-qualified vendors was “scheduling” or “planning”. Because of the uncertainties surrounding the “road studies”, it seemed impossible to ask the vendors in days / weeks when they would be finished. If vendors could finish the project earlier than the required date, the vendors could write this in the Value Added plan. “Planning” as a criterion focused only on the logical sequence between the activities and the RAVA plan.

Difference # 5: “planning” (scheduling) was the coherence between milestones and the RAVA plan (instead of the number of days/weeks)

Interviews

In April 2009, before the set-up of the tender procedure was finalised, the principles of BVP (including the way of ranking) were “tested” with the vendors in a so-called “market consultation” (before the start of the tender). One of the findings of the market consultation was that all vendors were (very) satisfied with placing emphasis on quality instead of price. However the findings on the use of the interviews as a ranking mechanism were diverse. Some companies were very comfortable with it, while others displayed hesitation. The core group of Rijkswaterstaat was convinced of the usefulness of interviews as a ranking mechanism. However, from the perspective of involvement of the vendors, the weight of the interviews in the final ranking had to be lowered. Interviews were counted for 20% of the ranking (instead of the proposed 25% or higher).

Difference # 6: less weight to the interviews in the ranking (20% instead of 25%)
The market consultation also showed a need from the side of the vendors to explain the way they saw the project by having the option to choose which key persons they would like to send to the interviews. The argument of the vendors was that the choice of the position of the interviewees would also be a way to illustrate how they see the project. In this case the freedom to choose the position of the interviewees was a way to further explain their vision on the project. This might provide an extra degree of difficulty for the project teams of Rijkswaterstaat, who needed to assess the interviewees: it might be easier to compare two key persons who have the same role/position than to compare two key persons who have different positions. Because the core group of Rijkswaterstaat understood (and agreed to) the arguments of the market, the vendors were allowed to choose 3 key positions (and the corresponding key person) themselves. The vendors could not choose the 4th key person: each vendor needed to send their Project Manager to the interviews.

**Difference # 7: vendors can choose themselves which 3 roles (and corresponding key persons) to send to the interviews**

**Ranking**

Ranking the suppliers was, just like in the original BVP methodology, aimed at finding the best possible vendor (within the given budget). However the ranking method was done in a different way from the “pure” process.

The first difference with regard to ranking was that an extra “safeguard” was built into the process. This was to use two independent scoring teams. Like in the BVP process, each team member rated the Risk Assessment plans, the Value Added plans, the schedules and the interviews individually and independently, after which all individual scores were discussed in the team. This team needed to come to a consensus score. The extra “safeguard” was that for the Risk Assessment plans, Value Added plans and scheduling two teams were installed. This way the process consisted of the following 3 steps:

- Each team member rated the vendors individually
- Coming to a consensus score in a team:
  - The 5 team members of team A came to a consensus score for each of the vendors
  - The 5 team members of team B came to a consensus score for each of the vendors (parallel to team A)
- Using the consensus scores of team A and of team B a “final” score for each of the vendors (for each criterion) was reached

**Difference # 8: making use of two teams who each come to a consensus score, after which the final score for each vendor (on each criterion) is determined (again in consensus)**

A more significant difference regarding ranking was the way the actual ranking took place. In the original methodology, one of the options was to have relative ratings. In other words, each vendor scores a percentage of the highest performing vendor (on each criterion). This relative scoring is not allowed in The Netherlands: the rule of independence of irrelevant alternatives says that the relative ranking of two alternatives A and B must not be affected by a third alternative C.
Within European law contracts can be awarded either on the basis of lowest price or most economically advantageous tender (MEAT). Logically, the system of MEAT was chosen for the fast track program. When an award is going to be based on MEAT the suppliers must be reasonably informed on the award criteria and relative weighting that will be applied to the award criteria. Award criteria must be objective criteria to ensure compliance with the principles of transparency, non-discrimination, equal treatment and which guarantee tenders are assessed in conditions of effective competition. As mentioned before, award criteria were pricing, RAVA plans, schedule (planning) and interviews. Logically, these criteria were disclosed prior to the tender process.

In the Dutch infrastructure sector bigger public clients have adapted a specific way to combine price and quality into best value (PSI Bouw, 2007). All “quality” criteria are “transformed” into “fictitious” Euros. To calculate which vendor has the most economically advantageous tender, the amount of “fictitious” Euros scored on quality is deducted from the vendor’s budget. E.g.: for a € 100 million project, the maximum (fictitious) deduction is € 70 million (=70%). This would lead to a fictitious price for this vendor of € 30 million. For each criterion, a vendor could get a deduction on its price (when the grade on the quality criterion is more than a “6”) or there could be an addition to the price (when the grade on the quality criterion is lower than a “6”). See Table 2.

Table 2

<table>
<thead>
<tr>
<th>Grade</th>
<th>% of maximum value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>9</td>
<td>75</td>
</tr>
<tr>
<td>8</td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>-25</td>
</tr>
<tr>
<td>4</td>
<td>-50</td>
</tr>
<tr>
<td>3</td>
<td>-75</td>
</tr>
<tr>
<td>2</td>
<td>-100</td>
</tr>
</tbody>
</table>

E.g.: if RAVA plans counts for 20% in the ranking of a € 100 mln project, the maximum deduction (resulting from interviews) would be € 20 mln. A score of “7” on interviews would lead to a deduction of € 5 mln

Difference # 9: ranking the vendors based on their absolute scores (instead of the relative scores), and based on price +/- “deductions from quality scores”
Pre-award phase

The pre-award phase was done after the award. European legislation prohibits public clients to negotiate or have extensive clarification with vendors before the award. For this reason Rijkswaterstaat used the phase directly after the award as an “introduction phase”. This phase is set up exactly like the pre-award phase. At the end of this phase the contractor has a project management plan, a risk management plan which includes all the risks and concerns of the client and an overall schedule. Also the weekly risk report has been brought into place.

Difference # 10: the pre-award phase is carried out after the award.

Execution phase

A question Rijkswaterstaat had to face in the absence of a past performance system, was how the best value contractor could be incentivised to control risk he did not control after contract award. The solution was a so-called “risk fund”. This fund is filled with the predicted amount of € for the risks that are the responsibility of Rijkswaterstaat. During the execution of the project the contractor can propose measures for risk minimization. The money for these measures are paid out of the risk fund. Also risks that actually occur are paid from the risk fund. The contractor receives 25% of the remaining euros in the risk fund at the end of the project. This risk fund, combined with the weekly risk report, ensures that the contractor works in the best interest of the client.

Difference # 11: working with a risk fund

Results of the 6 clusters

All 6 clusters have been tendered and have started the design or construction phase. The goals of the procurement strategy were to accelerate the delivery and the length of the tender procedure, to maintain the competition and to procure the best possible value.

The first conclusion is that the procurement strategy has made the acceleration of the projects possible. All the tenders were executed within a period of five months, where a tender for this type of projects usually takes eight to ten months. The transaction time is cut in half. The early involvement of the vendors can accelerate the delivery of the projects up to 18 months. The focus on timely delivery of the projects lead to proposals by the vendors for shortening the building period.

The number of vendors that participated in the six tenders was sufficient and comparable to the usual number for projects of this size. One of the most important findings of the market consultation was that there was a shortage in tender capacity in the infrastructure market in 2009. The risk for Rijkswaterstaat was that not enough vendors would want to bid for the projects of the Fast Track program. On average every tender has had 5 vendors bidding, with a minimum of 3 on one project and 6 on two projects.
The third goal of the procurement strategy was to achieve the best possible value for the projects. Figure 2 shows the results of the six tender for both the price and quality. As described in the previous sector the quality criteria were transformed into fictitious prices. The green part of the bars means that vendors have earned a deduction from their price based on positive scores for their quality. The red part of the bars depicts an addition to the price due to a negative score on quality aspects. In case of a deduction the offered price is the sum of the two green parts. In case of an addition the price is the green part of the bar. For instance: the winner (number 1) of the SAABA-A tender earned a deduction of 7 million Euro’s on his price of 37 million Euro’s for the quality of his offer. The resulting fictitious price is 29 million Euro’s and is the lowest fictitious price.

The figure illustrates that the quality aspects highly differentiate between the vendors. The figure also shows that in 50% of the tenders the vendor with the highest quality is also the winner. In the three other tenders the winner had the second or third quality score. This suggests that the procurement process has a bias to vendors with high quality (as expected and intended). The
question is if this high quality means that Rijkswaterstaat pays a higher price. In 5 out of 6 tenders the lowest price is not the MEAT, the exception being package E. In 67% of the tenders, the second prioritized competitor in price is the MEAT. This means that quality and a sharp price seem to go hand in hand. The conclusion about price and budget however should be made at the end of the project, taking regard of all the change orders.

The interviews made up 20% of the ranking. The interviews were very differentiating. There were no problems in scoring different key persons. The free choice of the key persons by the vendors did not raise any problems. Another observation is that the individual consultation sessions during the tender sometimes led to attempts to verify chances of risks minimizing measures by the vendors. Not answering these questions was sometimes misunderstood by the vendors and led to allegations of non-transparency.

Summary and conclusions

Over the last years, PIPS tests have not only been done within the US, but also outside the US. Recently a number of (successful) tests have been done in the Netherlands (see the other papers in this Special Issue). Now, Rijkswaterstaat is using PIPS in its Fast Track project, making it the world’s largest PIPS pilot, worth circa $ 800M. In designing the tender process Rijkswaterstaat’s goal was to stay as close to the original PIPS methodology as possible. A few adaptations had to be made. In this paper 11 adaptations (mostly minor) to the original methodology are outlined. The philosophy when applying the adapted methodology however was still completely intact: it was aimed at finding the highest quality vendor within the budget (like in the original methodology as developed by Dean Kashiwagi).

The results of the six clusters have been promising: when setting up a tender process using Best Value Procurement acceleration in the delivery of projects was made possible, the competition was maintained and high quality and a sharp price went hand-in-hand. Of course the best value vendors will have to show their expertise during the design and realization phase. The outlook is bright; Rijkswaterstaat is currently contemplating applying the principles in new projects (outside the fast track projects).

References

Kashiwagi, D. (2009); A revolutionary approach to project management and risk minimization; best value performance information procurement system. PBSRG, Arizona State University

Tender Environmental Impact Assessment Extra Discharge Capacity Afsluitdijk

Stan van Veenendaal (MSc)  Wiebe Witteveen (MSc)
Ministry of Infrastructure and Environment, Ministry of Infrastructure and Environment,
Rijkswaterstaat Rijkswaterstaat
Utrecht, The Netherlands Utrecht, The Netherlands

The project Extra Discharge Capacity Afsluitdijk (EDCA) of Rijkswaterstaat aims to enlarge the capacity of the discharge sluices by building new sluices, necessary because of the climate change. Rijkswaterstaat has decided to outsource the responsibility to write the Environmental Impact Report to an engineering firm. Specific problems in the outsourcing of engineering jobs involve the limited liability of the engineering firms as well as how they receive little or no feedback from the design and build phase. This paper tests the hypothesis that BVP can also be successful in the area of engineering services. The result shows that BVP can be successful in the procurement of engineering services. The application of BVP at EDCA was very distinguishing in selecting the best value vendor. It identified a vendor at a lower cost, shorter time schedule, and with more innovative ideas than the Rijkswaterstaat project team.

Introduction

Rijkswaterstaat has not only faced problems in the delivery of infrastructural projects; many projects studies have also suffered from time delays, cost overruns and low client satisfaction (see Arts, 2007). In The Netherlands, Rijkswaterstaat usually chooses an approach in which the procurement procedures for designing and building, for giving planning consent and to develop the Environmental Impact Assessment (EIA) are carried out in series (although the trend is changing to carry out the planning consent and the procurement procedure parallel early in contract involvement; see Nijsten et al, 2008). Specific problems in the outsourcing of an EIA involve the limited liability of the contractors (engineering firms) as well as how they receive little or no feedback from the design and build phase. As a rule, a different contractor carries out the design and build contract. Rijkswaterstaat has tried to counter these problems by increasing management, inspection and control. The results have not been satisfactory. Rijkswaterstaat is therefore looking for a way to minimize management, inspection and control and enlarge the accountability of engineering firms that carry out the studies for planning consent and the EIA’s.

This is one of the reasons to test the application of Best Value Procurement (BVP) in engineering services. Another main reason is the complicated process of studying the alternatives and the environmental effects in an EIA. As a consequence of the Rijkswaterstaat policy of outsourcing construction services Rijkswaterstaat does not have sufficient in-house expertise for the execution of EIA’s. Rijkswaterstaat wants to hire an expert and allow them to do their job, as well as to test the hypothesis that BVP can also be successful in the area of engineering services.

The project Extra Discharge Capacity Afsluitdijk (EDCA) is the first project at Rijkswaterstaat since the fast track projects where BVP has been applied. The scope of the project is the study of alternatives and the environmental effects for the building of new extra Discharge Sluices in the
Afsluitdijk. The market for these studies consists of large engineering firms (the same parties as in the case study Essche Stroom/Waterschap Den Dommel). This paper describes the project and contract scope, the context of the tender process, the PIPS-process for EDCA, and the process results and conclusions.

Project Scope

The Afsluitdijk is a major causeway in the Netherlands running from North Holland province, to Friesland province, over a length of 32 km (20 miles) and a width of 90 m, at an initial height of 7.25 m above sea level (See Figure 1). The Afsluitdijk is in between the IJsselmeer (fresh water) and the Wadden Sea. It is a fundamental part of the larger Zuiderzee Works, damming off the Zuiderzee, a salt water inlet of the North Sea and turning it into the fresh water lake of the IJsselmeer. The Afsluitdijk was built between 1927 and 1933.

Beside the dike itself there is also the necessary construction of two complexes of shipping locks and discharge sluices at both ends of the dike. The complex at Den Oever includes the Stevin lock and three series of five sluices for discharging the IJsselmeerwater into the Wadden Sea; the other complex at Kornwerderzand is composed of the Lorentz locks and two series of five sluices, making a total of 25 discharge sluices. Periodically discharging the lake is necessary since it is continually fed by rivers and streams draining their water into the IJsselmeer.
action is taken, the discharge capacity from the IJsselmeer to the Wadden Sea would be reduced by 50%, which would lead to safety issues because of the higher water levels in the IJsselmeer. Extra dikes could be built but would be an expansive option. Extra discharge capacity is needed, to retain the current differential of 50 cm up until the year 2050 (after 2050 more investment is needed).

Additionally, the two existing complexes of shipping locks and discharge sluices are in desperate need of repair. During the repair period the complexes can’t be used, so the repair can only take place if enough discharge capacity will be available. The proposed new complex provides this needed capacity (See Figure 2). Because of the state of the existing complexes and the raising sea level the building of the new discharging sluices is urgent. In fact, the new sluices must be operating at the end of 2016. The total budget of the EDCA project is approximately €240 million for the realization and about €8 million for the overall research and decision-making process.

**Figure 2.** Idea of the new discharging sluices with Fish passage in the Afsluitdijk

**Contract Scope**

To realize the new discharging sluices, different decisions and permissions should be obtained. The most important of these permissions require a study to the effects of the complex on the environment. An Environmental Impact Assessment (EIA) provides this information. The assessment identifies the environmental consequences of a plan or project and should also identify environmental friendly alternatives. The assessment is reported in an EIR (Environmental Impact Report). An EIR is mandatory for the project EDCA.

The initiator, Rijkswaterstaat, is responsible for the Environmental Impact Report (EIR). The competent authority (the Minister of Infrastructure and Environment) is responsible for the decision on the project, using the EIR process. It is then published and seeks public responses.

With the cooperation of Rijkswaterstaat, the Minister of Infrastructure and Environment assesses and documents the resulting environmental impact of the project during and after construction as
determined in the EIR process. When necessary, it may take extra measures to limit the resulting impact on the environment if it exceeds the projected impact. The EIR is required for the permitting of the subject project to build the discharging sluices. The Design and Build contract for building the sluices will be tendered in 2011.

Rijkswaterstaat has decided to outsource the responsibility to write the EIR to an engineering firm. The scope of the contract includes the following: project management, stakeholder management of the decision making process, environmental technical expertise and producing all the necessary reports (of which the EIR is the most important). The purpose of the outsourcing is to minimize the decision-making of Rijkswaterstaat. Rijkswaterstaat estimates the project duration at 15 months and has a budget of €2 million.

**Context of the Tender Process**

As a government agency, Rijkswaterstaat has to follow the European legislation on public works and services. Rijkswaterstaat is a large buyer of engineering services. Instead of a (European) tender each time Rijkswaterstaat needs an engineering firm, Rijkswaterstaat uses a framework contract, similar to an IDIQ (indefinite delivery, indefinite quantity) contract in the US, where vendors are prequalified and compete on individual projects. For this framework contract, Rijkswaterstaat has held one European tender to select a certain amount of engineering firms which can be chosen to work with at individual projects. The result of this tender is a framework contract. Within the framework contract, EDCA has 11 possible firms for the tender. These 11 firms are the largest engineering firms in the Netherlands. Having the framework contract already in place minimizes the need to go through a full and open source selection, which takes an inordinate amount of time (similar to IDIQ). The project team nevertheless must comply with the European legislation and principles of transparency, objectivity and non-discrimination.

The framework contract removes the need to select parties for the tender process. The selection (or prequalification) has already taken place. To obtain the best suitable engineering firm for writing the EIR only the award criteria have to be used (see paper of Van Leeuwen and Witteveen in this Special Issue.). The best value Performance Information Procurement System (PIPS) is used as an award system within the framework contract, which states that all selected firms are allowed to participate in the award phase, and an interim selection or shortlisting based on past performance is not allowed. Therefore the past performance filter of the best value PIPS is not being implemented.

**Best Value Procurement at the EDCA**

The main reasons for using PIPS at the EDCA project is, except the complex process of studying alternatives and their environmental effects, the pressure on the time schedule (sluices operating in 2016), the amount of possible tenderers (the 11 engineering firms) and the complexity of the work (writing an E.I.R. with participation of other parties). Therefore Rijkswaterstaat is looking for a short tender process with low costs and experienced tenderers (specifically experienced on writing the EIR). BVP searches for the firm that can best minimize risks and make the most of
the chances during the tender period and the realisation of the study. This expert is expected to best realize the goals for the initiator and the project. PIPS gives this party the space and responsibility it needs to do the job the best way, with the best value.

As said the project goal(s) are very important to measure against. The main and most important project goal for EDCA is time (project finished in 2016). Within European law, contracts can be awarded either on the basis of lowest price or most economically advantageous tender (MEAT; see Van Leeuwen in this Special Issue). MEAT is based on the price of the tender and the quality of the tender. Rijkswaterstaat policy is MEAT for all tenders in the infrastructure domain. By choosing an award based on MEAT, the firms must be reasonably informed on the criteria and relative weighting, that will be applied to each criteria, to identify the most economically advantageous tender.

For the EDCA project price weights for 25% and the quality weights for 75%. Award criteria were:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>25%</td>
</tr>
<tr>
<td>RAVA (Risk Assessment and Value Added)</td>
<td>30%</td>
</tr>
<tr>
<td>Schedule (planning) and scope document</td>
<td>10%</td>
</tr>
<tr>
<td>Interviews with 2 key persons</td>
<td>35%</td>
</tr>
</tbody>
</table>

Rijkswaterstaat uses PIPS on a larger scale with the fast-track projects. The fast-track project and the differences between this project and the pure/original PIPS methodology (as developed by Dean Kashiwagi; see Kashiwagi, 2009) are described by Jeroen van de Rijt et al in this Special Issue. The similarities between EDCA and the fast-track projects are the absence of the use of Past Performance Information, the time schedule, the use of consensus scoring and the monetizing of value (PSI Bouw, 2007).

EDCA differs on a few items from the fast-track projects. These items are:
- Different weightings
- Overall grade for RAVA plan instead of separate grades
- The scope document
- Value added plan leaves room for variants with impact on time and/or budget
- Key personnel for the interviews were predefined

In the EDCA project, the weighting of the interviews (35%) was deliberately higher than all the other criteria and the weighting in the fast-track project (20%). The interviews are believed to provide the best prediction of whether the project can be successful in terms of reaching the project goals. The weighting of the schedule was lower than in the fast-track project (10% versus 5%), because the schedule is less dominant in distinguishing the best value vendor.

In the EDCA project each team member gives one overall grade to a RAVA plan (just like in the original methodology) instead of a grade for the Risk Assessment and Value Added plan separately. The fast-track project showed that the RA and the VA are complementary and that a mitigation measure for a risk can actually be a chance. For instance: if the risk is that the
milestones of a project cannot be met, a vendor can propose in their VA plan to change the scope so that the milestones can be met.

New in this tender is the scope document, which is called the risk assessment (RA) plan contractor in the EDCA project (Kashiwagi, 2009). The scope document and the schedule give an idea of the scope and planning of the project as seen by the tenderers. The RA plan requests the vendors to address the risks they do not control. The mitigation measures for risks that vendors do not control are part of the scope and the price. The VA plan covers items that are not in the scope and which can increase, decrease or add value to the project. The VA items are not included in the scope and therefore also not in the price.

The final difference between EDCA and the fast-track project is that in EDCA the two key staff members were chosen by the client (the project manager and the manager EIA). In the fast track project, the vendors chose three of the four staff members. The experience from the fast track project shows that vendors did not differentiate as much in the functions chosen as key staff members. So the conclusion is that the EDCA project stayed closer to the BVP process than the fast track projects.

**Tender Phase**

The tender process started with an overall information meeting for all 11 tenders in the framework contract. During this meeting, overall information about the project was given and the tender process was explained. One week later, a special meeting was held about the award (MEAT) and Best Value Procurement/Performance Information Procurement System. All participants could learn about BVP/PIPS and what it meant for this tender. After both meetings six firms decided to compete in the tender process. Ten days later an individual consultation meeting with each participant was held. The use of “consultation sessions” is standard procedure in The Netherlands when dealing with projects this size. It gives the firms an opportunity to find out the risks and concerns of the initiator (amongst other things). Finally four firms participated in the individual consultation meetings. Two firms withdrew from the tender process as the tender preparation was too short for them.

The firms had about three weeks after the consultation meeting to complete their tender. The quality documents were sent in and within one day the documents were rated. Five people formed the selection committee, all expert members of the team of the EDCA project team. Each team member rated the RAVA plans, the schedules and the RA engineering firm individually and independently, after which all individual scores were discussed in the team. The scores were set by consensus.

After the rating in the selection committee the interviews of the key personnel took place. The questions were made based on the quality documents. The same person asked these preset questions during each interview. Every vendor got two interviews, one with the project manager and one with the manager for the EIA. The selection committee was present with the interviews to rate the interviews. The selection committee members were the same ones who rated the quality documents and the method for rating the interviews was the same as with the quality documents.
After the rating of the interviews by the selection committee, all scores were compiled and entered into the score form. The envelopes with the prices were opened and after filling in the price on the score form, the winner of the tender was known.

Results of the Tender

Table 1 below shows the result of the tender. The maximum value is the maximum addition or subtraction from the fictive price. Between brackets is the score on a scale from 2 to 10, 6 being no addition or subtraction.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Vendor 1</th>
<th>Vendor 2</th>
<th>Vendor 3</th>
<th>Vendor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(deductible from the price)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>not to be disclosed</td>
<td>not to be disclosed</td>
<td>not to be disclosed</td>
<td>not to be disclosed</td>
</tr>
<tr>
<td>Rank on price</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>RAVA</td>
<td>€ 600.000</td>
<td>€ 300.000 (4)</td>
<td>-€ 450.000 (9)</td>
<td>€ 450.000 (3)</td>
</tr>
<tr>
<td>Scopedocument</td>
<td>€ 100.000</td>
<td>€ 50.000 (4)</td>
<td>-€ 75.000 (9)</td>
<td>€ 75.000 (3)</td>
</tr>
<tr>
<td>Schedule</td>
<td>€ 100.000</td>
<td>€ 100.000 (2)</td>
<td>-€ 50.000 (8)</td>
<td>€ 50.000 (4)</td>
</tr>
<tr>
<td>Interviews</td>
<td>€ 700.000</td>
<td>€ 0 (6)</td>
<td>-€ 350.000 (8)</td>
<td>€ 0 (6)</td>
</tr>
<tr>
<td>Fictitious Deduction on price</td>
<td>-€ 450.000</td>
<td>€ 925.000</td>
<td>-€ 575.000</td>
<td>-€ 525.000</td>
</tr>
<tr>
<td>Rank on quality</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Overall ranking</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

The winner of the tender was the combination of DHV and Arcadis, both large engineering firms who had bundled their experience. The best value vendor was dominantly better than the other vendors. The winner had very good scores on all aspects: RAVA, scope document, time schedule and interviews. The price the best value vendor offered was the second lowest price. Rijkswaterstaat feels they have bought the best value at a competitive price.

All vendors offered far below the budget, but there was a large spread in price ranging form €900,000 to €1,600,000. The vendors varied in classic tender behaviour and in thinking in the best interest of the client. This was especially dominant in the Value Added Plan. The best value vendor had some very good ideas about the EIA. process and the participation of the stakeholders (management agreement). The best value vendor offered to reduce the 15 months given to write the EIR to about one year.

The interviews and the time schedule, however, were less distinguishing. The interviews gave quite a bit of dominant information about the content of the tenders and the insight of the tenderer in the scope of the project. All tenderers were good at this; therefore the scores for the interviews were not very distinguishing. The same was true for the schedule. While all asked
Information was in the schedule, no firm was excelled in this area. The RA engineering firm and the schedule gave insight into understanding the firms on the project scope.

Evaluation of the tender process shows that the vendors are positive about the use of BVP (Significant, 2010). The vendors appreciate the search of Rijkswaterstaat for better procurement methods and the vendors are enthusiastic about the possibility to distinguish themselves from other competitors. Vendors unanimously accept the used criteria (RAVA, scope document and interviews), although some remarks were made on the functions of the key personnel. Vendors consider training vital for the understanding of the methodology. The engineering firms question if Rijkswaterstaat can keep distance and minimize management, control and inspection during the execution of the EIA.

The result of this test shows that BVP can be successful in the procurement of engineering services. It has yet to be shown that the final results of EDCA are significantly better than other EIA’s and whether Rijkswaterstaat is capable of minimizing management, inspection and control.

Conclusion and Further Implementation at Rijkswaterstaat

The application of BVP at EDCA was very distinguishing in selecting the best value vendor. It identified a vendor at a lower cost, shorter time schedule, and with more innovative ideas than the Rijkswaterstaat project team. This reinforces the other results of the best value PIPS processes in the United States and also the previous Dutch tests. The evaluation of tender process shows that vendors appreciate the use of BVP. The preliminary result of the hypothesis that BVP is also successful in the area of engineering services is positive.

This result shows that PIPS should used more often within the framework contract and with the procurement of engineering firms (as their assignments are not always clear). Rijkswaterstaat will shortly start four more procurements for engineering services within the framework contract using BVP. Whether the contractor can minimize cost overruns and time delays will be the subject of a subsequent paper.

References


Kashiwagi, D. (2009); A revolutionary approach to project management and risk minimization; best value performance information procurement system. PBSRG, Arizona State University

Leeuwen, M. van (2010); Using best value procurement in Europe, need for compromise? (in this Special Issue)


PSI Bouw (2007); Gunnen op Waarde, hoe doe je dat? Rapport in het kader van het PSIBouw-programma Gunnen op waarde (only in Dutch).

Rijt, J. van de; W. Witteveen, C. Vis & S. Santema (2010); Best Value at the Directorate-General for Public Works and Water Management in The Netherlands (in this Special Issue)

Significant (2010), Evaluation Best Value Procurement (Evaluatie Best Value Procurement; only in Dutch).
Hiring an External Advisor Hydrology at Water Board De Dommel

Bas Plehn
Email: bplehn@dommel.nl

Best value PIPS has been introduced in the Netherlands in the procurement of construction systems. The Water Board De Dommel utilized best value PIPS to select engineering consultant services. The test differed from other Dutch tests in that the PIPS process used the pre-award phase before the award phase. The best value selection of engineers also proposes that design firms can compete on value (price and performance). The engineering selection process was much closer to the original BVP/PIPS than the construction phases. The major lesson learned is the BVP/PIPS is a paradigm shift. The success of the test led to the recommendation of more professional services using BVP/PIPS.

Keywords: best value, designer selection, engineer selection, paradigm shift

Introduction

Dutch Water Boards (Dutch: Waterschappen or Hoogheemraadschappen) are regional government bodies in the Netherlands. A Water Board is charged with managing the water barriers, the waterways, the water levels, and the water quality in its region. Water Boards are among the oldest forms of local government in the Netherlands, some of them having been founded in the 13th century. Water Board De Dommel has been involved in monitoring the quality of the surface water for many years and manages water levels in the areas where the Dutch live and work. By deliberately giving rivers more space to flow, or even overflow naturally, De Dommel prevents floods in the rural areas. Regulating water levels is also of essential importance to agricultural and recreational sectors. The areas in Noord-Brabant that have a sandy soil suffer from a shortage of water; De Dommel reduces this by keeping the water longer in certain areas in the region.

Water Board De Dommel is active throughout the entire Dommel river basin, from the Belgian border up to Den Bosch. Currently, there are almost one million inhabitants in this area. As a local authority, Water Board De Dommel is dependent on tax contributions, which enables it to continue working on efficient water management.

The maintenance of rivers and streams ensures sufficient water drainage and abundant supplies of nourishment for both plants and animals in the water environment. One of the ways in which the Water Board contributes to this is by mowing streambeds. As a measure against floods in our rural areas, enough space is given to the rivers and streams to overflow naturally at specified locations. Sometimes, water levels can cause problems and dealing with these problems is the domain of the municipal authorities. The provincial authorities and the Water Boards are closely involved in solving these problems and giving the necessary solutions.
By regulating the water levels in water bodies, De Dommel ensures that nature reserves and agricultural areas have a sufficient water supply. De Dommel implements various methods for retaining water in these areas (such as dams) allowing rivers to meander naturally, or by raising riverbeds.

In this paper the process and results of a BVP-PIPS project is described. First, the scope of the project is portrayed, along with the reason why BVP-PIPs was used. Next, the process of the pilot is outlined for each of the PIPS filters. The paper ends with conclusions.

**Scope of the Pilot and Reason for Implementing BVP-PIPS**

As part of a large project that should reconstruct the whole Essche stream, an external engineering firm will be asked to make a model of the stream area. These models will be used to map the effects of the changes. A hydrology engineer of this engineering firm will support and advise the hydrologist of the Water Board. Together they will head the project and will conduct meetings and discussions with specialists, executives and civilians. For this assignment the Water Board wants an external advisor to give quality, knowledge and time to achieve the project. In the past, governmental structures always gave the assignment to the engineering firm that offered the lowest price (instead of looking primarily at quality).

The problem with this process is that an engineering firm may lower their price and their quality to win a bid. Many times, the lowering of price impacts the performance and quality of work from the engineering firm. The lower priced vendors sometimes cannot deliver their promised work, with may result in additional risk and an altered finished product. This situation drives the quality of design and engineering down, and the price for services up. The additional transaction costs of the clients in more meetings, decision-making, and communications is usually not documented but perceived to be intense by the using group.

After a strategic meeting with the “core tender team” of the Water Board, the method of Best Value Procurement / Performance Information Procurement System (BVP/PIPS) was chosen as the most suitable procurement strategy. The professional tender team, consisting of a senior procurement officer, senior legal advisor and project manager then investigated the needs of the (internal) client.

The need appeared to be an ideal profile for a tender based on the BVP/PIPS-method. There were high demands on the quality and experience of the engineering firm. The most critical person on the team will be the hydrologist, who will need to be selected very carefully due to his critical role. Quality in general is of more value to the client than cost. The value of the contract was estimated at € 300,000 over a three year period. This type of value has always been very hard to determine in a classical tender. A classical approach (by way of a CV or even presentations) is simply not enough to judge who the ideal contractor might be. The Best Value method would make it possible to determine the best contractor for the project. Based on this decision, the project team would then begin to set-up the tender procedure, starting with the formal formation of the project team and the composition of a tender strategy.
The Procurement Process

The project team needed to present a tender strategy document to the (internal) client for approval, before they were officially allowed to start the procedure. The composition of the project team in a tender procedure, like the one described here, is formally prescribed. It should at least consist out of the following functions and disciplines:

- Project manager
- Senior procurement officer
- Senior legal advisor
- Internal experts

The contract would fall under the tender policy of the Water Board and the applicable legislation (Bao and European tender guidelines). Therefore the Water Board was required to have a public tender, with or without a preliminary selection (the open vs. the restricted procedure). The choice was made to have a public tender without a preliminary selection, using the BVP/PIPS methodology and using “MEAT” as award methodology (Van Leeuwen, 2010). This differs from the way the Ministry of Transport (in the Fast Track Project and the EDCA project) and Den Bosch have used PIPS as they used pre-selection (see Van de Rijt et al, Veenendaal & Witteveen and Van Hulzen, 2010). The open procedure was selected because of the time schedule and in second place because there are not many vendors who full fill the subscription for over a 3-year period. Regarding the time schedule the restricted procedure takes approximately 77 calendar days and the open procedure takes approximately 52 calendar days.

As in the case of Rijkswaterstaat, the process of fictitious prices was used. Price/Quality relation was 40% / 60%. With a budget of € 300.000 the maximum “fictitious value” that could be gained was € 180.000. Vendors scoring a “10” on all qualitative criteria could in this way deduct a fictitious amount of 180.000 from their bidding price (Van de Rijt et al, 2010). See Table 1 below.

Table 1

<table>
<thead>
<tr>
<th>Award Criteria</th>
<th>Weight</th>
<th>Maximum Quality Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>40%</td>
<td>-</td>
</tr>
<tr>
<td>RAVA Plan</td>
<td>20%</td>
<td>€ 60.000</td>
</tr>
<tr>
<td>Planning</td>
<td>10%</td>
<td>€ 30.000</td>
</tr>
<tr>
<td>Interview</td>
<td>30%</td>
<td>€ 90.000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td><strong>€ 180.000</strong></td>
</tr>
</tbody>
</table>

A tender protocol was created, in which all formal demands concerning the tender were stated. While making the procedures of the tender the BVP/PIPS-methodology was used as much as possible. A short description of the different filters used on this project is given.

Filter 1: Selection of Parties to be Invited

Due to the open characteristic of the tender, minimum requirements have been set (qualitative selection criteria based on the knock-out principle). This is done to guarantee a minimum level of
quality among the vendors. One of the requirements was submitting a minimum amount of comparable reference projects. The performance measurements from previous clients are general not allowed in the tender because of limits as described by Van Leewen (2010.) Instead, the Water Board asked for comparable reference projects regarding the assignment.

After the announcement on the websites of the Dutch tender calendar (aanbestedingskalender.nl) and the European official publication site Tender Electronic Daily (TED), the appropriate and relevant documentation was made available electronically and all interested parties were invited to an information meeting.

At the information meeting three main topics were discussed
- Clarification of the content of the contract
- Clarification of the features of the tender procedure that is used
- Training PIPS-methodology

There was a lot of interest in the planned information meeting with a total of 24 persons present (representing 11 companies). Since the time did not permit to finish the presentation, it was decided to organize a second information meeting. The second information meeting was exclusively about the PIPS-methodology. Only the senior procurement officer and the senior legal advisor were present on behalf of the client. This information meeting had a lot of interest as well, with 11 representatives from 11 companies.

**Letters of information**

The overall nature of the questions asked in writing (and orally during presentations), was twofold. A large portion of the question was about the specifications of the contract. There were also a number of questions, as could be expected, about the methodology of the tender. This kind of tender was for most of the interested companies the first introduction to this methodology. Yet by and large the companies where glad for the opportunity to show the quality of their work, instead of having to solely rely on having the lowest price. The project team deemed it necessary to publish multiple letters of information. In this way the parties were offered enough opportunities to understand the procedure and the contract.

**Filter 2: Written Tender**

The large amount of interest at the information meetings led to 11 tenders. All tender looked exactly the same, in accordance with the prescribed format. Every tender was divided into two envelopes and assessed by the Contracting Officer and legal advisor on validity and completeness, before put on two different stacks—one stack with the bid, recommendations and CD-ROM and the other stack with the RAVA plan and schedule.

Only the second stack was accessible to the rating team who rated the RAVA plans and the schedules. As in the case of the Fast Track Projects (see Van de Rijt et al, 2010), the Risk Assessment and Value Added plan were rated separately. The rating team could rate in a range from 2 to 10 and fill it in the rating form that was handout by the Senior procurement officer. The procurement officer instructed the team members to rate with dominancy—if a RAVA plan
was dominantly good and the risks were ‘outside the control of the vendor,’ then they deserve a "10."

There were a lot of differences in the RAVA plans and schedules. Many of the companies wrote down risks assessments that deal with risks that they can control. Others planned schedules that are not related with the risks assessments and a couple of companies wrote down nothing, assuming that they have everything under control. The average score ranged from 3.0 to a 7.6, with little deviation among the team members.

*Filter 3: Interviews*

The interviews were set up according to the methodology. The time for each interview was 30 minutes. The assessment team consisted of 4 assessors, including the senior procurement officer. A questionnaire was set up for every tender based on the assessment of the RAVA plans. The interviews were divided over two sessions due to the amount of interest from the market. A location the office of the stream area (Beneden Dommel) of the Water Board de Dommel was chosen. The reason this location was chosen, was because most of the engineering bureaus were not familiar with the site. The set-up consisted of two tables, one for the interviewer and the person being interviewed and one big table for the assessment committee, which was put perpendicular to the first table.

There was quite a bit of difference between the submitted RAVA-plans and the interviews, as more than half of the candidates did not participate in writing the RAVA-plans themselves. This is contrary to the direction given them to have the experts do the RAVA plan; however, as seen in other tests, the paradigm is difficult to break. This made assessing the right man for the job a bit easier. Average interview scores ranged from a 3.0 to an 8.8, with little deviation among the team members.

*Filter 4: Determining the Best Tender*

Since the award criteria were predefined upfront, determining the Most Economical Advantageous Tender (MEAT) was rather easy. One day after the interviews, the assessment committee convened to evaluate all personal findings. The assessment committee were unanimous in their joint assessment. Due to the “Best Value Procurement”-methodology one winner emerged after completion of the assessment matrix. This winner had (out of the 11 competitors)

- 3rd place in Risk Assessment plan; 1st place in Value Added plan; 3rd place in overall RAVA plan
- 1st place in Interviews
- 1st place in Planning
- 5th place in Price (and 17% below the disclosed budget)

Overall supplier C provided the Best Value using the MEAT system (Figure 1).
Figure 1. Screen Shot of the Evaluation Results

Filter 5: Pre-award

All other interested parties were informed about their dismissal along with motivation. At the end the value of the contract is € 249.275 excluding VAT, 17% below the budget. The period after awarding (or having the intent to do so) a government contract is characterised by the so called “Alcatel period”, a kind of objection period of 15 days for parties involved who, for motivated reasons, do not agree with the award decision (see also Van Leeuwen, 2010). During this period the party issuing the tender and the selected contractor are not allowed to sign any irrevocable contractual agreements. However the parties are free to consult and make preparations necessary to come to a definite agreement, in order to be able to sign the contract shortly after the objection period ends. The different steps of the pre-award phase were therefore incorporated into the Alcatel period, so the agreement could be signed immediately after the objection period ended.

During the pre-award phase, the person who was interviewed and their team leader came to Water Board de Dommel in order to evaluate the RAVA-plan and the interview. The vendor made a complete risk management plan, along with the control measures. The planning has also been thoroughly discussed and both parties know what is to be expected for the next three years. After the contract was signed with the contractor the Senior procurement officer officially handed over the project to the Project manager and archived all the documents digitally.

Filter 6: Risk Management During Execution

Instead of a weekly report, a monthly cycle has been chosen. The contractor is responsible for their own assessment. If during the project the risks are not continuous with the time schedule, the contractor must report this immediately to the project manager and discuss the next steps that are to be taken regarding the risk assessment plan. The layout of the report was handed out by the Senior procurement officer.
Conclusion and Further Implementation

The market of engineering bureaus is mainly characterized as a market that is divided by a number of big consultancy bureaus, complemented by a large group of small (and often specialized) consultancy firms. Like the lack of dynamics in the market, the development of the tender procedures had come to a standstill in this market (as perceived by De Dommel). One could say that “normally” the tenders used be awarded to the tender which was economically most profitable. This was despite using the execution plan and the presentation as quality (MEAT) criteria. The PIPS-method was, by all parties involved in this pilot project, considered as completely innovative compared to the current situation (as described above). This resulted in enthusiasm, but also curiosity and therefore a lot of questions.

The new procurement methodology (BVP/PIPS) required an extra amount of attention, not just for the client, but also from the side of the vendors. This was caused by the change of paradigm. It is expected that once all parties get acquainted with the PIPS-methodology, the administrative burdens (concerning the formal side of the tender) will eventually decrease. Post evaluations have taken place with the vendors that were dismissed. They found the methodology to be very clear, transparent and legitimate.

The procedure, in a formal manner, ran its course with relative ease. Nevertheless, the procedure had a two week delay. The delay was caused by an additional second round of written questions, which was introduced on request by the interested parties. This made it possible to ask questions even after the second information meeting (which was also additional).

The bids themselves, drawn up based on the description from the tender protocol and the PIPS-methodology, were clear. The quality of the content of some tenders was not as expected. This might be due to the unfamiliarity with the methodology.

The assessment itself took quite a bit of time since there were 11 parties involved. At the same time, it was very clear to the assessment committee (material experts), who were accustomed to thick files with execution plans.

Since this project, other stakeholders within the Water Board have asked the Senior procurement officer to help them with their needs by using the new procurement methodology (PIPS). The projects range from small desk studies to big construction designs, but are always regarding “where the effort and mind of the bureaus is required.”

References

Kashiwagi, D. (2009); A revolutionary approach to project management and risk minimization; best value performance information procurement system. PBSRG, Arizona State University

Van de Rijt. J & W. Witteveen & C. Vis & S. Santema (2010); Best Value at the Directorate-General for Public Works and Water Management in The Netherlands (in this Special Issue)
Van Hulzen, G (2010); BVP at 's-Hertogenbosch: Buying a retention and settling tank (in this Special Issue)

Van Leeuwen, M (2010); Using best value PIPS procurement in Europe, need for compromise? (in this Special Issue)

Veenendaal, S & W. Witteveen (2010); Tender Environmental Impact Assessment Extra Discharge Capacity Afsluitdijk (in this Special Issue)
Introduction

Breijn B.V., the engineering consultancy company of Heijmans, has recently applied the Best Value Procurement/Performance Information Procurement System (BVP/PIPS) approach in its work for the municipality of 's-Hertogenbosch. Over the year 2009, procurement for the 1500 m3 subterranean retention and settling tank was carried out. The tank is located in the vicinity of a residential area and at the edge of a park. The maximum available budget was €1 million (excluding VAT). In this paper the process of the test pilot is described. First, the reason for choosing BVP/PIPS is outlined. Next, the preparation phase is described. Then the selection phase, including the awarding procedures, is explained. The realization phase in 2010 is described and the conclusions are discussed.

Rationale for Best Value PIPS

Awarding a contract on the basis of the lowest bid is still standard practice in municipal procurement. This does not always lead to the lowest eventual or final project cost. In practice, the costs are not only determined by the bid price: substantial extra costs occur because of risks that appear during the realization phase. The costs of these 'unforeseen circumstances' are passed on to the customer, who pays a higher final project price than was awarded. For this reason, the municipality of Den Bosch prefers awarding on the basis of Most Economically Advantageous Tender (MEAT). This procedure was also chosen for the procurement of this retention and settling tank. For the first time, it was decided to integrate Best Value Procurement into the EMVI tender procedure (Economisch Meest Voordelige Inschrijving), with the objective of

* This paper is a translated and updated version of the paper as published in the book “Prestatieinkoop” of Van de Rijt & Santema (Netherlands, 2009)
awarding construction to a vendor that showed the best awareness and ability to minimize the risk.

**Preparation Phase**

Prior to the project, a guideline for selection and awarding was developed, where boundary conditions and possibilities for the vendor to create value were specified. The objective was to realize a well-functioning facility within budget. Vendors were given a design and preliminary ARW-specifications (a standard format for quotations) of the work. This was done in order to create a reference frame that made it possible to evaluate the effectiveness of BVP/PIPS. Beforehand, the municipality identified their desire that BVP/PIPS should be done in accordance with ARW2005 (the Dutch standards for national and European procurements). A legal test case motivated them in this direction. Two potential risks were identified:

- The first round, Past Performance, can be used as a selection criterion, but is not sufficient to award the contract to a specific vendor (see also Van Leeuwen, 2011 in this Special Issue).
- The interview round is aimed at the vendor, but the bid itself should also be taken into account when awarding the contract (same as above).

On the basis of the legal test case (above), the choice was made to follow the non-public procurement procedure of ARW2005. This Dutch procedure (formerly known as “public with a pre-selection phase”) was taken as a starting point, and BVP was integrated into it. The preparation consisted of the following two parts:

- A meeting to decide on the starting points.
- A workshop on instructing the vendors.

The project management team consisted of employees of the municipality of ’s-Hertogenbosch and Breijn. The project was monitored by a lecturer of Hogeschool Zuyd and a purchasing manager of Heijmans, who both were educated with BVP. Progress, points of concern and important documents were discussed in a three weekly meetings. The evaluation team was formed from the project management team.

The time line for the project is listed below:

- A project that would be suitable as a first case for BVP was identified by the municipality in September 2008.
- The project start up took place in November 2008.
- A first draft of the selection procedure was discussed in January 2009, and a legal test case was investigated.
- A meeting where potential candidates were informed about BVP took place in March 2009. More than 20 contractors attended.
- The definite selection procedure was determined by April 10, 2009. This was placed in the national procurement calendar of April 29.
- Between January and May, the awarding procedure was decided on and tested judicially. It was sent to selected vendors in June.
Bids were received on September 4. They were evaluated before September 14. Interviews took place on September 17 and 18.

The selected vendor was notified on September 28.

The realization phase was scheduled, according to the selected vendor’s planning, to start in March 2010.

The order was sent to the contractor on January 11, 2010.

Delivery took place on July 14, 2010.

During preparations, a meeting was organized for potential vendors. The municipality of ’s-Hertogenbosch organizes such a meeting on a yearly basis. This specific meeting focused on the principles of Best Value Procurement and the way this could be implemented in municipal procurement. Attendance was high (with respect to the regular number of bidders – normal/BV numbers) and contractors were enthusiastic about BVP/PIPS. The principles of BVP (such as putting responsibilities on the expert, which is where they belong) were discussed. During this meeting, potential contractors were invited to ask questions. One of the questions asked was the potential impact of using Past Performance as a selection criterion on smaller contractors. Some were concerned that new parties on the market would have difficulty getting contract awards. Another question was whether BVP would be more efficient for vendors than other ways of procurement. These points were taken into consideration, and an effort was made to minimize the concerns. Contractors were invited to participate in the selection procedure.

Selection Phase

As discussed before, the project team has divided the project in a selection and an awarding phase. The selection procedure guideline included:

- Minimal requirements for candidates.
- A list of questions about Past Performance, targeted at similar projects.
- A customer review form for these projects.

Vendors were invited to include 3 realized projects, each with a description by the vendor and a customer review. If they met the minimum requirements and added three (3) references to Past Projects, their request to be part of the awarding procedure was taken into consideration. Past Performance has been given a wider context here as compared to the original methodology of Dean Kashiwagi (Kashiwagi 2010). Not only customer reviews were requested, but also descriptions of the project by the vendor.

Candidates were requested to hand in six (6) copies (five (5) of them anonymously) of the following documents:

- Three (3) descriptions of the reference projects.
- Three (3) customer reviews of these projects.
- A declaration of the good financial health of the company.
- Model K (a declaration that the bid meets competition standards).
- A valid ISO 9001 certificate.
Six vendors submitted a request to take place in the awarding procedure that met these requirements. Their entries were reviewed, and five of the vendors were invited to take place in the award procedure (it was made clear beforehand that only five vendors would take place in the award procedure).

The project team drew the following conclusions about the selection procedure:

- There were a relatively small number of vendors that submitted a request to take place in the award procedure, while attendance at the introductory meeting was very high. Possibly, the paradigm shift and the amount of paperwork involved deterred some candidates. Alternatively, self-selection could play a role in BVP: it may be that only parties that considered their own chances high enough entered. In this way, the selection and awarding procedure would put a lower load (lower transaction costs) on the total market (all contractors).
- There was one vendor that was not invited to the award phase. This contractor did not show well in the Past Performance area. The customer reviews were of poor quality, even though candidates could select the projects that were taken into account. This was a major contention of Prof. Kashiwagi in the early BVP/PIPS tests in the United States (Kashiwagi, 2010).
- The reviewers’ judgments on Past Performance varied on a number of points. Although this did not influence the outcome, it showed the need for a good preparation and a common frame of reference in evaluating these documents.

### Awarding Procedure

The five selected candidates received information on the awarding procedure, which was planned to take place within a short timeframe. Because of the lower availability of staff during summer holidays, several vendors asked to extend the submission deadline. This request was granted. Interestingly, the vendor to whom the project would eventually be awarded did not ask for an extension.

The award procedure contained the technical requirements as well as the method by which offers would be judged. This was based on:

- Price: 30%
- Quality: 70%

The quality portion was broken out into the following sections:

- Risk management and value added plan: 35%
- Interviews with key project managers: 50%
- Planning: 15%

The choice was made to put an emphasis on quality, rather than price. Within this category, interviews with the vendor's project managers were given high importance, as these people play a crucial role in making the project successful. First, a general round of inquiry was organized, and the results were documented in a so-called Bill of Information. All candidates made use of the possibility of inquiry on an individual basis. Each of them put forward one or several ideas to
optimize design or construction. This round resulted in some unexpected and inventive ideas, which vendors implemented in their risk management and value added plan. The most important ideas concerned:

- Modifications to the design.
- A different method of construction.
- Reduction of inconvenience to the direct environment.
- Reduction of exploitation costs.

Prior to the final assessment, reviewers had several extensive meetings to discuss the method of evaluation. This concerned both the anonymously submitted risk management and added value plans of the awarding phase and the evaluation of the reference projects from the selection phase. It also involved the way in which interviews with candidates, which did not take place on an anonymous basis, would be assessed. For this purpose, project team members were trained by their colleagues from Hogeschool Zuyd and Heijmans. In this training, there was an emphasis on looking for “value added” items when interviewing vendors. In BVP, it is thought that the best candidate should stand out clearly. In the worst case, all candidates are excellent, and assessment is a difficult task. If all the candidates are perceived as being the same, the best value will be the best value for the lowest price.

For the awarding phase, all vendors submitted four (4) copies (three (3) of which were anonymous) of:

- A value added plan, consisting of two (2) pages. (A4, font: Arial 10)
- A risk management plan, consisting of two (2) pages. (idem)
- A planning/milestone schedule: vendors where free to choose a format.

The bidding price was submitted separately (only one (1) copy). This price was not allowed to exceed the maximum available budget: higher bids would not be considered valid. The project team members did not know the price during the evaluation procedure. This was only known to their colleagues from Hogeschool Zuyd and Heijmans.

The awarding phase was assessed by five (5) reviewers: two representatives of the municipality, including the project manager who would be involved in the realization phase; two employees of Breijn, including the manager who was in charge of project preparations; and one employee of Hogeschool Zuyd as an independent reviewer.

The reviewers were handed out the anonymously submitted documents by their colleagues who monitored the process. These also investigated the validity of the bids. Two (2) candidates were asked to make minor revisions on the basis of ARW standards (art. 3.14.4), because the interpretation of the documents they submitted was unclear. Other project team members were not involved here. During the awarding phase, the five reviewers evaluated the anonymously submitted proposals on value added and risk management. In other words, they did not know which candidate submitted which proposal. This prevented prejudices from entering into the evaluation. The individual assessment took about one and a half working days, including writing down the results.

Subsequently, the interviews were assessed by three (3) members of the reviewing committee. The identity of the persons to be interviewed was made known to the reviewers on the day of the
interviews. Before the interview round, the project management team submitted a list of questions. Interviews were scheduled for 1 hour. The decision not to work with five reviewers was made because this could possibly be overwhelming for candidates. Inquiry showed that vendors were also positive about this setup.

All elements (both the risk management and value added plan and the interviews) were rated by individual reviewers. By adding the results, a final score was determined. Corrections for differences in opinion between reviewers were not applied, and consensus on the assessment of vendors was not sought for. The score of each bid was simply an arithmetic mean of scores given by the individual reviewers. As a control check and as an evaluation of the BVP approach, an analysis of differences between reviewers was made. Although this showed differences in the assessment of specific points, these did not appear to impact the results. It was concluded that reviewers recognized the most important information and that only small differences exist due to differences in interpretation.

**Realization/Construction Phase**

Selection of the vendor was followed by a pre-contracting phase. This involved consultations between the awarding authority, the engineering consultancy firm and the contractor, which lead to a contract in which the scope of the work and risk allocation were unambiguously specified. The commission for the work was sent to the contractor on January 11, 2010.

The consultation and realization phase evolved largely according to the expectations of the awarding authority and supervisor. Although they were fully satisfied, it should be remarked that carefully specified instructions and interim task management appear of key importance. In this way, it can be prevented that parties revert to their traditional roles, which would reduce the effectiveness of BVP.

The contractor has taken his full responsibilities as specified in the contract. During realization, two ‘adverse circumstances’ (in risk management terms) worth mentioning occurred. Problems of a geotechnical nature made it difficult to lower the underwater base of the excavation to the right depth. This event fell within the risk profile of the contractor, who caught up with a preliminary delay of two weeks by taking measures that accelerated construction.

On the request of residents of the surrounding neighbourhood, changes to the layout of the park were made. As a result, technical modifications to the design of the retention tank were necessary. Because this changed the scope of the work, the additional costs were charged to the awarding authority.

No other supplemental work was necessary, and the project was realized within the specified timeframe and budget.
Conclusions

The pilot project was extremely successful. From five selected vendors, four valid bids were obtained. One bid exceeded the maximum price and was therefore considered invalid. The four valid proposals were judged on quality. On the basis of the submitted documents, two candidates scored much higher than their competitors. One of these candidates stood out in the interview round. When the prices were made known, this vendor also appeared to have the lowest bid. The preparation of the implementation of BVP took longer than was expected. This was mainly due to the fact that a legal test case always takes longer than anticipated.

In this case, BVP has led to the following results:

- Best overall quality
- Shortest construction time with less inconvenience
- Lowest price
- Vendor has highly skilled personnel
- Low exploitation costs
- Optimal risk management

In the final evaluation, this was summarized as: "Quality does not have to be expensive."

References

A Cross-Purchasing Portfolio Application of Best Value Procurement: *Lessons Learned from Six Cases at Ballast Nedam*

Guido J.E. Koreman, M.Sc.
Director of Purchasing, Ballast Nedam N.V.
The Netherlands
Email: g.koreman@ballast-nedam.nl

Ballast Nedam like any other business in the industry encounters failure due to purchasing based on low cost. Research shows that these tend to arise because of poor planning, non-compliance to agreements and incomplete project evaluations among others. Taken into account the effort put into the purchasing process one wonders why this kind of purchasing approach is still practiced. Best Value Procurement uses the expertise of subcontractors to streamline the total value chain by making the potential values and risks explicit and the management of each accountable to one party in the chain. The question is whether this kind of purchasing approach could and should be the approach to any given purchase done. In this paper lessons learned from six cases at construction company Ballast Nedam are described. Successful and less successful implementations are shown, as well as lessons learned on each of the PIPS filters. Conclusion is that the BVP/PIPS can be used in both construction and non-construction purchasing and in one-time projects as well as with IDIQ contracts.

**Introduction**

Failure cost in the construction industry is so dominantly present that one wonders if it is not an inseparable part of this line of work. Turnover rates of twelve percent are standard losses, and some say that it might be even higher when the whole supply chain is incorporated in the analysis. This kind of “waste” cannot be tolerated in a time where everyone is being scrutinized about their social responsibility.

This paper describes the implementation BVP/PIPS in Ballast Nedam, a large construction company in The Netherlands as having the potential to formulate an answer to the failure cost reduction (Kashiwagi, 2008: BVP, Ch 4.). The paper starts with a short description of Ballast Nedam as a company, its purchasing process and a description of the background on why BVP/PIPS was started. From 2008 to 2010 six projects in a range of needs were executed using the BVP/PIPS PIPS methodology. Two of these six projects were abandoned for various reasons; four projects were implemented with the methodology and one project is currently in preparation. The projects, adaptations to the BVP/PIPS process, the lessons learned in applying BVP/PIPS and the outcomes are described. The paper ends with considerations on using BVP/PIPS as a purchasing approach, its implementation results at Ballast Nedam and the conclusions. The paper tries to answer the following two research questions:
• Can BVP/PIPS aid in bringing the failure costs down?
• Is BVP/PIPS applicable to purchasing efforts in general?

Ballast Nedam and its purchasing process

Ballast Nedam group (BN) was founded in 1877 and is one of the major construction companies in the Netherlands and even among the major players in Europe (Source: Deloitte, 2009; annual reports of construction companies). The majority of the € 1.4 billion turnover in 2009 is realized in the Netherlands. On an international scale, BN operates selectively in certain fields of expertise. The company is active in more than one segment of the construction industry. BN develops, realizes, manages, finances and operates projects in the build environment. This encompasses living, working and leisure realized by housing and (public) buildings and offices. Infrastructural work enhances mobility, public environment, water management, energy and industrial building solutions.

Purchasing in the construction industry is dominantly transaction oriented (Dubois & Gadde, 2000; Thompson et al., 1998). BN is no exception to this rule: approximately ninety percent of the 2009 purchasing volume is procured by applying some kind of a tendering procedure on a project basis. The other ten percent is based on IDIQ contracts (indefinite delivery, indefinite quantity) (also known as framework contracts). As the majority of the projects are “execution based” only, the final decision for selecting a supplier is based on price; quality, logistics and other issues are taken into account. This is also in compliance with the industry “standard” (Duren & Dorée, 2008).

Having invested heavily in an “administrative system”, to ascertain a uniform and certain quality in the way BN addresses the market and puts its “rights and obligations” into contracts, a lot of effort is put into the supplier selection process. The final outcome of the building process in terms of earnings has not improved however. Failure cost or cost deviation for contractors in general have actually risen since 2005 by some fifty percent to ten percent, nine percent in 2009. Inadequate preparation resulting in unfeasible plans, not meeting commitments, and insufficient evaluations to learn from mistakes, are mentioned as the main causes for failure costs (source: USP Marketing Consultancy, January 14, 2010).

Although failure costs are perhaps just a matter of perception and recent awareness, the question remains “what can purchasing do to in helping to bring down the unforeseen costs in the building process?”

Establishing feasible plans by bringing in skilled suppliers, having them fulfill commitments by following a structure of accountability and working with suppliers on a cross-project basis in order to climb the learning curve of cooperation, are issues in the hands of the purchaser to accomplish.
**Introduction of BVP**

At the end of 2007 the purchasing side of BN took notice of the philosophy of BVP/PIPS. At the same time, one of the prefab concrete factories of BN, being a possible subcontractor in a project for a client, was confronted with the philosophy. Having the potential for being an answer to at least two of the challenges mentioned above, the annual Best Value conference in Arizona was attended.

In theory the BVP/PIPS process makes the suppliers accountable for liabilities they can manage, it utilizes the expertise of suppliers, it preplans and prepares the players for risks (foreseen by the experts) and it ascertains the owner’s budget and planning. (See Kashiwagi 2010 in this Special Issue)

As the dominant culture in the construction industry in general and at BN specific is “seeing is believing,” two test projects were initiated on the buy-side of the BN organization and the mentioned project on the sell side (prefab concrete factory) was monitored. Packed with the experiences of these three projects a procurement conference for the Ballast Nedam organization was organized within three-month time of the Arizona conference, sharing the experiences gathered so far.

**BVP/PIPS Projects**

Up to the time of this paper, Ballast Nedam completed the execution of six projects and has one project in preparation. Table 1 lists the projects executed so far. For each of these projects a description will be given, adaptations to BVP/PIPS done are described and the main issues confronted in applying BVP/PIPS are discussed.

A 7th project is going to start in September 2010; a passenger bridge over a highway for the international Floriade in Venlo 2011 will be build (€ 1.000.000).

BN started off with a straight forward kind of Best Value Procurement implementation (see Case 1). The PIPA system (Kashiwagi, 2008, BVP) was followed strictly and not surprisingly things worked out well. Convinced by the strength and simplicity of the process, experiments with the application of BVP/PIPS were introduced thereafter. The following adaptations were tried in the different projects:

1. Replacement of the “planning” criteria in PIPS for other business critical topics.
2. Multiple demands are packed in one single BVP/PIPS approach
3. Adaptation of the scoring weights and criteria
4. A cross-project indirect purchasing initiative, leading up to a IDIQ contract
5. A multi-vendor selection (best of the rest)

These “alterations” (some minor, a couple somewhat more major) will be discussed further in the projects concerning. These projects are described in the remainder of this paper.
Table 1

<table>
<thead>
<tr>
<th>Project</th>
<th>Budget</th>
<th>Invited</th>
<th>Start</th>
<th>Finish</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise reduction screen along railway</td>
<td>€ 312,500</td>
<td>13</td>
<td>May 2008</td>
<td>October 2008</td>
<td>On time, within budget, no complaints</td>
</tr>
<tr>
<td>Metal piles</td>
<td>tbd</td>
<td>3</td>
<td>May 2008</td>
<td>Abandoned in June 2008</td>
<td>Commodity item, highly dependent on world market developments, therefore found not suitable</td>
</tr>
<tr>
<td>Decorative prefab screen along railway</td>
<td>€ 700,000</td>
<td>14</td>
<td>September 2008</td>
<td>Abandoned. Project execution postponed till 2010</td>
<td>Continuous changing demands and uncertainties towards suppliers true capabilities</td>
</tr>
<tr>
<td>Fuels for cars and machinery</td>
<td>App. € 8 million for 2010</td>
<td>6</td>
<td>June 2009</td>
<td>October 2009</td>
<td>2 best value suppliers selected for 3 year IDIQ contract</td>
</tr>
<tr>
<td>Prefab concrete paving stones</td>
<td>Est. € 6 million +, for 2010</td>
<td>12</td>
<td>January 2010</td>
<td>June 2010</td>
<td>2 best value suppliers selected for 3 year IDIQ contract</td>
</tr>
<tr>
<td>Wholesalers for hardware and tooling</td>
<td>App. € 6 million for 2010</td>
<td>5</td>
<td>January 2010</td>
<td>June 2010</td>
<td>3 best value suppliers selected for 3 year IDIQ contract</td>
</tr>
</tbody>
</table>

Project 1: Noise reduction screen along railway

The first BVP/PIPS project undertaken in BN concerned the fabrication and installation of a noise reduction screen along a railway track as part of a bigger project being executed. The screen consisted of a metal frame holding rectangular sheets of glass measuring up in total to 75 meters in length and 3.36 meters in heights. A rough sketch of the screen existed, but the detail engineering still had to be done. The calculated budget was a “precise” figure of € 312,500.

In looking for possible suppliers fourteen suppliers were identified, thirteen were invited, of which ten showed up at the BVP training. After the training sessions eight suppliers said they were going to make a bid. Finally, four suppliers handed in a proposal.

Among the bidders, only one did not work for Ballast Nedam during the last twelve years. This subcontractor, who considered himself a high performer, liked the process of BVP/PIPS and decided to join the process.

Interestingly enough, it was this supplier that ended up having the best price, the best RAVA plan, the best schedule and had the best interview of all suppliers. There was dominant information that this supplier best suited the project.

A unique proposition of this supplier was the prefabrication of the elements instead of constructing at the construction site. This led to a faster construction time and thus less downtime.
of the railway track. None of the parties involved, including BN, had come up with this idea. Logically, this subcontractor was chosen to perform the work.

Although the project manager was educated in BVP and was part of the decision making unit and therefore involved in the whole process, it turned out to be quite difficult to let go of old habits and have “confidence” in the capabilities of the supplier. Being used to directing suppliers during the execution, the project manager started wanting to know all kind of details and asking all kind of questions concerning the performances to be made by the supplier. This “C-type” kind of behavior is very common among project leaders in the construction industry (Kashiwagi, 2008; Ch 2). “Luckily,” other supplier problems arose on the project which needed attention. Having put in quite some effort in this supplier already, the project leader had to decide to “let go” and rely on the weekly reports. This turned out very well, as the supplier was able to perform his duties as promised without interruptions.

One issue that arose was the variation in distance of the stamps on which the noise reductions screen was to be placed. As its occurrence was foreseen by the supplier, corrections were made in time and execution could go as planned.

This part of the project was finished on-time, on budget and as planned in contradiction to a lot of the other activities performed at this project. This result supported the idea that application of BVP/PIPS has the potential to cut down on failure costs.

**Project 2: Metal Piles**

The BN “foundation technique” company is in frequent need for metal tubular piles. As these piles differ in length, width and wall-thickness, no standard up-front purchase can be done. When needed, an offer is requested from the small circle of four producers and two brokers found internationally. The purchase done is the mere buy of the pile. If situated in e.g. Finland, the BN foundation technique company will take care of all the necessary activities to get the pile to their own project. The purchase decision is therefore solely made on the price level offered and time to availability.

This price level is influenced by the purchase price of the metal sheets and the fabrication method of the supplier. However, differences in production methods do not discriminate in product performance or appearance. Quality issues are therefore no issue. There are no other real value adding activities done by the suppliers (as perceived by the buyer). Product related services as shipping, clearance, etc. are all taking care of by BN itself.

This purchase situation was found to be unsuitable for a BVP/PIPS approach, because of the following reasons:

- There was a clear specification to work from.
- A metal pile at the lowest price was bought (supplier’s technical expertise is in the price of the product).
- There were no risks or liabilities to manage.
- Risks were to be managed by the buyer.
Within the BN group there was the perception that the handling of the metal piles (once they come from the producing company) can be better handled by BN than by the producer. Metal piles as purchased by BN at this moment have thus the characteristics of a pure commodity.

**Project 3: Decorative prefab screen along railway**

This project resembled the first BVP/PIPS project done at BN. It concerned the fabrication and application of glass fiber enforced concrete elements to a ground containing wall towards a railway station. Stretching over a surface of approximately 1400 square meters, 700 elements consisting of ten different patterns had to be placed in four months time. A penalty was due if the delivery time was not met. The calculated budget was €600,000.

After a delay of ten weeks and two months of preparation, three glass fiber enforced concrete suppliers and twelve prefab concrete suppliers had been identified and invited to the educational meeting in January 2009. Within a week of this meeting, twelve cancellations came in from the prefab concrete suppliers as they, without an exception, were not willing to take the application of the elements at hand. One of the remaining suppliers turned out to be more of a project management agency with experience in cooperating with producers in this field and delivering end products. This company teamed up with one of the other invitees of the meeting (a coalition). The third supplier honorably declined, stating that the budget was not sufficient by far, as he had calculated for another contractor before. In the end two suppliers remained.

During the four weeks in which the suppliers worked out their RAVA-plans, the architect initiated the first, of what later turned out to be a series, of alterations to the design. Both suppliers were persuaded to hand in a RAVA plan and make up a budget based on the initial demand. The budgets and timelines turned out to be insufficient in comparison to the initial budget.

New alterations kept coming in, and proposed improvements by BN and the potential suppliers were laid aside by the client or its representatives, therefore making it difficult to meet budget and timeline restraints.

The resulting environment in March 2009 included:

- Due to inadequate research by the architect, there were unrealistic expectations towards product appearance, timelines and costs.
- Suppliers said they were unable to make the requested “product specifications.”
- There was an inability to confront the client with the consequences for the budget and timeline changes. Bound by the contract, the proposal to client stood and no excuses were accepted.
- The mystics of calculations had led to unrealistic expectations towards suppliers proposals.
- There was a collision of new and old thinking (more management) between project team and management.
- There was no clear distinction between supplier candidates.

The many uncertainties made it impossible for anyone to rise above the field. Because of this turbulence surrounding the project team, and it being only the second time running this system, the project team did not feel comfortable in bringing it to an end. The BVP/PIPS system was abandoned.

Having taken on this project, the project team had to bring the work to a (good) end. Realizing the status of the vendor community, some management, direction, and control was appropriate. In looking for alternative solutions with suppliers, foreign partners were found. They finally were able to offer the product demanded at a lower price and shorter timeline.

With the delay of several months, the execution of the application of the decorative elements finally began in the first quarter of 2010 for approximately €700,000.

Lessons Learned

1. In the preparation phase it is important to do substantial market research. Good market scanning in order to discover suitable suppliers (who can execute the project well) can be time consuming. It is however very necessary for the quality of the remainder of the process. This lesson is not unique for procuring with BVP/PIPS.

2. In selecting suppliers for the kick-off meeting Ballast Nedam was “generous” in its invitations. BVP/PIPS guidelines propose to minimize buyer decision making, and allow the "expert" vendors to make the decision themselves (whether they consider themselves suitable for the job). If the majority of the vendors are blind and lack expertise, the client may come to the realization that the level of the vendor community as a whole is low, and may have to do some management, direction, and control.

3. It takes skilful suppliers as well as a skilful client to run a BVP/PIPS process. Adhering strictly to the BVP/PIPS guidelines – both ways: to supplier and client - requires best value project managers who have been trained in the BVP/PIPS and the accompanying Information Measurement Theory (IMT).

Project 4: Fuels for cars and machinery

In the midst of 2009, BN started preparing for a tender to have its needs for fuels fulfilled. At that time there were also two business opportunities of current interest for BN, where fuels or the fuel distributing companies played a role. It was decided to have a BVP/PIPS approach where multiple requirements could be packaged and presented to the market to find the best values that can be procured.

The need for fuels for BN is twofold: fuels for lease cars and fuels for the project equipment. The BN department “lease management” has approximately 1800 fuel-cards under its management. All together some four million liters of fuels are taken in yearly at various stations all over the country and are administrated through these cards. The fuel consumption is periodically billed to the different project accounts.
There is also a need for fuels (gasoline) at the project sites for “rolling” and non-rolling equipment such as generators, cranes and bulldozers. For non-rolling equipment, the gasoline is distributed to the sites in tanks ranging from 1,000 to 5,000 liters. The rolling equipment, if allowed on public roads, has the ability to either take in the fuel at a home base station - of which two exist within BN - or at the project site. Some 2.5 million liters are consumed through the home bases and another 2.5 million is taken in at the project sites.

Concerning the business opportunities present, one consisted of a bus company tendering its new depots of which the choice for a location, the design and the operational management was an integral part. Ideas and figures for the yearly distribution of some 18 million liters of fuels had to come up to the table therefore.

The other opportunity concerns a new business line BN is pursuing: building and exploiting compressed natural gas stations (CNG). This line of business is operated through the company’s label CNG-net. Filling-stations are realized for (public) transport companies as well as placed at existing fuel stations for common use. For the realization of the latter, BN is in need of the favor of the tank station owners, being either a dealer or a fuel company.

The traditional approach of splitting up the demand requires decision making, decisions that would not be as effective as asking the expert vendors to make the decision. Optimization of the supply chain is caused by minimized decision making. If there needs to be a decision, the expert should be making the decision. It is better for the supply side to make the decision of who is going to offer what.

In total eight supplies were invited to the tender of which five handed in an offer. One of them however made two separate offers through two of its business lines which are set apart in the company (company A and D in Table 2). An overview of the proposals received and their relative positions, based on the outcome of the scoring matrix used in the BVP/PIPS process, is presented in Table 2.

Table 2

Overview of the Relative Position of the Proposals to the Different Demands for Fuel Needs

<table>
<thead>
<tr>
<th>Suppliers &gt; Demand Ú</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lease cars</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car fuels</td>
<td>-</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td><strong>Industrial fuels</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projects</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Homebase</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Homebase + projects</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Bus Depot</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td><em>Total industrial</em></td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>
From Table 2 it becomes clear that no synergy exists from combining car fuels with “industrial fuels”. One dominant supplier is present in all separate demands for the industrial requirements and the choice to make is evident. It was decided that supplier A would get the job for supplying the industrial fuels.

For car fuels, supplier D looked like the winner. However, the lack in true risks and a competitive advantages among the suppliers, made this purchase more of a commodity item and therefore price became a bigger issue in weighing the decision. Besides, the participation in the CNG-net “adventure” has not been taken into account in this outcome yet.

Scoring Weights and Criteria vs. Pricing

Looking at the scoring matrix as shown in Table 3, one notices there was a large discrepancy between the scoring of the RAVA plan and the scoring of the interview for supplier C. The supplier turned out to be very knowledgeable in the interviews, but failed to document it in the written risk submittals. This, amongst others, made the BN project team feel uncomfortable with the distribution of the weights and the scoring given. Had dominant information done the guidance to the scoring?

The price difference was felt to be of a much greater importance for the organization and the past performance was felt to be of little importance.

Changing and shifting these weights to show more of their importance to the organization (e.g. 30% on price instead of 25%), did not change the outcome of the process however, as can be seen in the “score without CNG” ranking in table 2.

In order to valuate CNG-cooperation, it would have been easiest to have some kind of financial figure on what CNG was going to bring BN. This could have been used in bringing down the budget calculation. This was not the case, however. This figure depends on too many variables to take into account to calculate.

In the end, money made the difference: the pricing of fuels. In combination with the potential earnings of CNG (“extra weight” to this criterion), this made the choice even easier as the cheapest provider also was willing to pursue this opportunity in further depth. Supplier C was chosen above supplier D in all weights and scoring irrespective.

Half a year further in operating together, things have run smoothly from the beginning with supplier C. This supports the BVP process selection.

Lessons Learned

1. After having scored and evaluated the propositions, a score automatically stands out in the scoring matrix. The fact that the project team thought price had not been weighted enough in the comparison, denotes the fact that the scoring process had not been prepared sufficiently. The team only realized after seeing the results of the scoring matrix that price had not been given enough weight. One can keep shifting the weights till the
desired outcome appears. But the lesson learned is that one should keep looking for dominance in performance. If not there, then price is the separator. Suppliers must be instructed how to deal with the different demands in their propositions. In this case the BN team got one RAVA plan for the total proposition from one supplier and four RAVA plans for the specific demands from another supplier. The question arisen is how to compare the one with the four? Based on the current experience the answer would be four times.

2. It might be wise to define the key persons who need to come to the interviews. In this case, this decision was left to the suppliers. The result was a range of employees with different functions and different levels in the hierarchy attending.

Table 3

<table>
<thead>
<tr>
<th>Overall scoring matrix on BVP/PIPS for car fuel distributors w/CNG</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>% price difference</td>
</tr>
<tr>
<td>Past Performance</td>
</tr>
<tr>
<td>RAVA</td>
</tr>
<tr>
<td>Interviews</td>
</tr>
<tr>
<td>CNG-net</td>
</tr>
<tr>
<td>Score BVP/PIPS standard weight</td>
</tr>
<tr>
<td>25% price, 15% PP, 25% RAVA, 30% interview, 5% CNG</td>
</tr>
<tr>
<td>Ranking</td>
</tr>
<tr>
<td>Score without CNG</td>
</tr>
<tr>
<td>30% price, 15% PP, 25% RAVA, 30% interview</td>
</tr>
<tr>
<td>Ranking</td>
</tr>
<tr>
<td>Score alternative weights</td>
</tr>
<tr>
<td>30% price, 5% PP, 25% RAVA, 30% interview, 10% CNG</td>
</tr>
<tr>
<td>Ranking</td>
</tr>
</tbody>
</table>

Project 5: Prefab concrete paving stones

Ballast Nedam procures a great deal of pavement stones each year. In the last three years, BN procured € 6 million on the average from some 25 different suppliers. In total these suppliers send BN 3,000 invoices. A rough estimation of € 50 per invoice implicates high transaction costs.

After having evaluated the product group strategy within BN, the goal set was:

- To minimize the number of suppliers and their invoices.
- Make an IDIQ agreement for three years.
- Make contract(s) for concrete products and services associated with the following: Tiles, Stone, Curbs and Specials.
- Project details are to be exchanged on a project basis and final pricing is based on measures agreed.
• Look for a Corporation who acts Socially Responsible. A carbon footprint has to be handed in every year as part of this responsibility.

In order to spread the BVP/PIPS philosophy across the BN organization a new cross-organization project team was formed, comprising of seven people with four different functions. The first step in the BVP/PIPS process was to educate the people involved: internally and externally. Based on the questions received, the philosophy turns out to be quite easy to understand. Supplier evaluation showed “this innovative way of purchasing gives suppliers a chance to profile themselves in a most suitable way” as one supplier replied.

In this case the planning criterion was substituted with a CSR criterion (corporate social responsibility). Suppliers were asked to hand in their vision and actions to support this topic in a maximum of one page. The scoring was done according the BVP/PIPS way of working and stayed unchanged at five percent.

In assessing the “risk assessment and value adding plans” from suppliers, project members did not find it difficult to line-up the plans from “good” to “less good”. They did find it difficult however to point out the facts that made them order the suppliers the way they did. In Figure 1 the scores of the individual participants is shown. Based on the spread of scores, it can be noted that no real consensus exists.

<table>
<thead>
<tr>
<th>Identification of risks</th>
<th>quality of risk minimization proposal</th>
<th>quality value added activities</th>
<th>Overall value of RAVA plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.8 2 6 4 1.64</td>
<td>5.2 3 7 4 1.48</td>
<td>5.2 3 7 4 1.48</td>
</tr>
<tr>
<td>B</td>
<td>7 3 9 6 2.35</td>
<td>6.8 3 9 6 2.39</td>
<td>6.8 3 9 6 2.39</td>
</tr>
<tr>
<td>C</td>
<td>6.6 6 7 1 0.55</td>
<td>6.6 6 7 1 0.55</td>
<td>6.6 6 7 1 0.55</td>
</tr>
<tr>
<td>D</td>
<td>4.2 2 6 4 1.48</td>
<td>4.2 2 6 4 1.48</td>
<td>3.4 2 4 2 0.89</td>
</tr>
<tr>
<td>E</td>
<td>4.4 2 7 5 1.95</td>
<td>4.8 3 7 4 1.79</td>
<td>4 2 6 4 1.58</td>
</tr>
</tbody>
</table>

*Figure 1. Scoring matrix of the RAVA plans for prefab concrete stones*

The weights were adapted. Price was weighted forty percent, PP ten percent, RAVA twenty percent, Interview twenty five percent and CSR five percent. In the end two suppliers were chosen. They proved to be able to fulfill the delivery of these products on a national basis for a fair price. The best value supplier received the second best price of the two and the next ranking supplier had submitted the best price proposition.

In applying BVP/PIPS to non-constructive purchasing the first question arisen in setting up for the weekly reports is the frequency. Another question is “If there is nothing to report, do I have to report this?” The team decided, along the lines of the methodology, to indeed have the “weekly” reporting in place, even if there was “nothing to report”. Still, the team felt that for IDIQ contracts weekly reporting does not sound necessary and changed it to monthly.

A further difficulty ran into is the “truthfulness” of the “weekly” reports; how to be sure that all the issues that played up are reported. However, it was identified that these are issues that frequently are resolved quickly and are most of the time not critical.
After having finalized the pre-award phase cooperation started as from January 1, 2010, and has been successful so far.

**Lessons Learned**

1. Discussions to get to consensus tend to take quite some time. The group tends to find the “mean” instead of the facts. This causes two problems in the next steps:
   a. Drawing up interview questions for suppliers and assessing them;
   b. Pointing out to a supplier (and your organisation) why she has or has not been given the full score.
   c. “If you can’t name the difference, then their probably is no discriminative difference” turns out to be a wise and handy policy to stick to.

2. The interview must be used to find evidence in the expectations arisen from the RAVA plans. In not doing so the interviews turn out to fulﬁl a part of their own. More so, known suppliers to the project team members turned out to have gotten better scores, then unknown suppliers. The evaluation of the interview scores brought this to light.

3. It is difficult in getting the team to understand (and having the discipline in) doing the “weekly” reporting literally every week (or month).

**Project 6: Wholesalers for hardware and tooling**

In 2006 a project was started to bring down the number of hardware suppliers from some eighty companies to three. For political reasons, five suppliers were chosen in the end. The decision was made at that time to bring down these five to three in three years time. In June 2009 these five suppliers were invited to participate in a BVP/PIPS process for this reason.

The turnover to split among the three suppliers is about € 6 million. The exact demand for hardware for the coming years can only be estimated based on the numbers from the past. In order to get to some kind of budget, suppliers were asked to calculate a baseline, based upon the price for a shopping basket, filled with 50 articles which are marked as runners by the current suppliers.

The outcome of these calculations was found to be “surprising” to say the least. The calculation of one supplier was far below the rest and huge differences were noted among the price setting of common goods among suppliers. Table 4 shows these differences for different baselines calculated.

Besides that, certain items, however carefully defined, turned out to be still open for interpretation. In table 4 one item, were a price difference of more than 200 percent exists, is shown as an example. These baselines still all went in the final rating sheet in order to assess its effect on the final outcome. It turned out that it didn’t have an effect on the ranking.

The suppliers themselves also found the shopping basket not to be indicative for the efficiency of their process. They also confessed that this way of comparing is common practice among
contractors. BN turned out to be a positive exception to this rule, in a way that BN only asked for 50 items, where 1000 items are more common to be priced.

Other measures agreed on have a much greater impact on costs occurred, as standardization of items and brands to be delivered and it is this line of reasoning in which the final agreements was made up.

An important observation in each of the projects was that suppliers turn out to have quite some difficulty in naming their competitive advantage. Also the risks, with which they come up, often turn out to be marketing related issues, stressing their advantage over competitors, rather than being risks for client. In Table 5, only two are mentioned which BN encountered in this BVP.

Table 4

<table>
<thead>
<tr>
<th>Suppliers Product</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-TORK ADVANCED WIPER 415 (paper towels)</td>
<td>€ 96,48</td>
<td>€ 143,64</td>
<td>€ 143,52</td>
<td>€ 291,60</td>
<td>€ 279,07</td>
</tr>
<tr>
<td>Baseline price total product list</td>
<td>100%</td>
<td>121%</td>
<td>130%</td>
<td>132%</td>
<td>142%</td>
</tr>
<tr>
<td>Baseline total product list exclusive rarities in product offering</td>
<td>100%</td>
<td>135%</td>
<td>140%</td>
<td>134%</td>
<td>141%</td>
</tr>
<tr>
<td>Baseline total product list exclusive all unexplained rarities</td>
<td>100%</td>
<td>192%</td>
<td>203%</td>
<td>195%</td>
<td>203%</td>
</tr>
<tr>
<td>Baseline exclusive all excessive differences (&gt; 100%)</td>
<td>100%</td>
<td>118%</td>
<td>120%</td>
<td>126%</td>
<td>120%</td>
</tr>
</tbody>
</table>

Table 5

<table>
<thead>
<tr>
<th>Supplier, risk</th>
<th>Financial instability because of economic developments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solution</td>
<td>Because we have turnover from more than 10.000 customers, we are not dependant on one or more major clients. Besides that, we have a large credit facility, which is only minimally used. Therefore we are able to guarantee you continuity.</td>
</tr>
<tr>
<td>Supplier 2, risk 9</td>
<td>Solvability of supplying organization</td>
</tr>
<tr>
<td>Solution</td>
<td>All of our transactions are covered by an Insurance company. Therefore all our deliveries are guaranteed.</td>
</tr>
</tbody>
</table>

Several suppliers stated that they found the exercise confronting in a positive way. A statement from one of the suppliers in a project: “We are so convinced of our strength, but in assessing these towards ‘value added items’ and unique risks we eventually did not get it on paper very well. It made us involve more people from different disciplines in our organization. This had two positive effects for us: 1. The feeling that we all put an effort in, getting in a client. 2. We got to leverage our knowledge among ourselves. Some people from sales for instance, were not aware of the information exchange possibilities between our organization and of clients. Right the very next day, one of the salesmen got in a deal, because of stressing this fact to a client.”
In Table 6 two examples are shown of an item that one supplier sees as his competitive advantage and another puts up as risk. This shows the reason to take the Risk Assessment part and Value Added part of the RAVA plan together when rating them (see also the Veenendaal & Witteveen in this Special Issue).

During the pre-award phase, a great amount of time was invested to explain to the suppliers what was expected from them. As the service in this commodity group is important, the risk confronted with is very small as their respective RAVA plans showed. Discussion on this topic was difficult as they were not understood.

The monthly reports turned out to be of great value to both sides for spotting issues with a frequent occurrence. Returned items, for instance, were noted as a risk and therefore reported. In looking for ways to minimize them, the supplier started to make inventory of the reasons for their return. It turned out that “wrong ordering” and “wrong delivery” were major reasons. Now these topics are addressed. These issues are discussed every three month in an improvement meeting, thus making the cooperation stronger through time.

Table 6

<table>
<thead>
<tr>
<th>Discriminating Factors between Hardware Suppliers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value proposition, Supplier 1</strong></td>
</tr>
<tr>
<td>Supplier 1, Value Added Item 2</td>
</tr>
<tr>
<td>Emergency deliveries in case of calamities possible within 2 hours throughout the Netherlands.</td>
</tr>
<tr>
<td>Impact on costs in Euro’s</td>
</tr>
<tr>
<td>No addition costs at a yearly turnover of 500k. Savings approximately €100 per express order.</td>
</tr>
<tr>
<td>Impact on scheme in days</td>
</tr>
<tr>
<td>N.a.</td>
</tr>
<tr>
<td>Identified risk, Supplier 2</td>
</tr>
<tr>
<td>Supplier 2, Risk 1</td>
</tr>
<tr>
<td>Downfall in productivity because of missing tools and/or materials.</td>
</tr>
<tr>
<td>Solution</td>
</tr>
<tr>
<td>Because of our nationwide network, items can easily be picked up at nearby stores. We are able to deliver in 24 hours and if necessary we can do express deliveries by ourselves or by courier service.</td>
</tr>
</tbody>
</table>

**Lessons learned**

1. Baseline calculations must be confronted with care and thought over carefully
2. Suppliers have difficulties in writing RAVA plans and deciding what to write in which part of the RAVA plan. Heavy education is needed.
3. Measuring performance is relevant

**Supplier evaluations from the application of BVP/PIPS at BN**

The application of BVP/PIPS was not only new to the Ballast Nedam organization; it was also the first time the suppliers / subcontractors got to know BVP/PIPS.
Supplier evaluations produced the following:

1. The educational meeting where all suppliers were invited sit together felt strange, but transparent at the same time.
2. Possibility to differentiate is a plus for suppliers.
3. Suppliers are relieved that the rating / award is made on a weighted average, where price is only one element.
4. Suppliers experienced the process as very transparent.
5. CSR weight is felt as a relative low score in the total evaluating criteria. This is a way to differentiate one another.
6. The supplier reduction as a “must” is found too much of goal of its own. It must be the outcome of the process.
7. “Promising process of which we hope to encounter more in the future.”

Embedding BVP/PIPS in BN

The BN organization is not used to working in cross-organizational multifunctional project teams for purchasing activities. The time claimed from the different participants from a representative mix out of the organization is always a topic. Stressing the need for a widely supported solution by different companies and functions, people were reluctantly made available. The multifunctional approach asks for understanding and commitment from many different players, with different backgrounds. The successful completion and adherence to the BVP/PIPS philosophy asks for intense guidance during the whole process, even during the post-award phase (start of the weekly reports).

The time spent up to the pre-award stage is quite an investment for non-purchasing personnel. However, for purchasing personnel the time spent so far is a fraction of what a “normal tender” would cost them. The experience of the participants is overwhelmingly positive. At the pre-award stage the participants are halfway through the process, where in a normal scenario, the participants have already started execution at this point. This observation matches the observation of Rijkswaterstaat as described in the paper of Van de Rijt et al in this Special Issue.

When starting off it seems to be very difficult for a project-leader to really put his confidence in the hands of the supplier and “just” manage the risks stated in the weekly report. “I’m pleased that the talks are over, then we can start work,” as one of the project leaders said after having finished the pre-award phase. An observation that can be made is that in the beginning they tend to mingle very much in the suppliers responsibilities. Over time, as they find out that is not necessary, they seem to step back. It is a matter of a new experience and it takes time to change paradigms...

Hoping for an eye-opening experience for the participants at the purchasing conference at BN, the internal conference resulted in just one other concrete request for application. Still strengthened by the success of the one project that was already running and believing in its possibilities the core group set out to find other purchasing project to begin with. In total seven projects have been initiated, of which six have been finished (as of this writing).
It turns out to be quite difficult for people to imagine the gain of this purchasing methodology to their projects. Besides the imagination they need to lose the engravings of their past experience. An experience where they think they are in control by specifying the details of their demand, making it possible for them to compare and choose the best bid based on the lowest price.

There is a dominant idea around in the construction industry that the success of one project does not necessarily encompass the success for the next project. All participants need to be convinced, every project, all over again. This makes it time consuming and a long path to travel before this will be the dominant behavior in an organization.

Purchasing within BN also get requests from within the BN sales organization to aid in commercial propositions for clients who also embraced this kind of approach. This helps in getting BVP/PIPS established in the organization.

Conclusions

Invented for realizing construction projects in time, on budget and according to the customers’ demands, the BPV/PIPS method has proved itself to be a better procurement approach toward any purchase rather than the traditional tendering. Better, because it makes use of the expertise available and sets accountability in a logical way.

- It minimizes decision making by the client organization (Ballast Nedam).
- It forces the vendors to differentiate themselves in terms of dominant value.
- It transfers the risk and responsibility of performing to the vendors.
- It keeps the vendors accountable.
- The contract becomes a performance based contract instead of a specified contract using minimum standards.
- It assumes that the vendor is an expert, who can pre-plan and manage and minimize the risk that they do not control.
- It minimizes the need of the buyer/client to have technical expertise.
- It increases the value and performance of the service in terms of cost, time, quality, and customer satisfaction.

The questions raised in this paper were:
1. Can BVP/PIPS help in bringing down failure cost?
2. Is BVP/PIPS applicable to any kind of purchasing?

The only real evidence in answer to the first question can be found in case 1, the noise reduction screen. BVP/PIPS has the potential to get to more feasible plans by bringing suppliers’ skills, experience and appropriate knowledge embedded in their proposition Therefore they are more committed and can be held accountable. This tackles two of the mean reasons mentioned for the existence of failure costs.
On question number two, the cases described in this paper show that BVP/PIPS is very well applicable beyond purchases of subcontractors for construction projects, e.g. for procurement of concrete pavement stones and hardware tooling.

The BVP/PIPS process was found not to be applicable for pure commodity buying, where the client (Ballast Nedam in this case) did not “allow” the vendors to be differentiated or the vendors were not able to differentiate themselves (car fuels). If the client does not want the vendors to minimize the risk, the BVP/PIPS process is of little use. This has less to do with the BVP/PIPS process as it has to do with the perception of the client side. The cases show that BVP/PIPS can work in project-environments (e.g. noise reduction screen) as well as in IDIQ contracts (e.g. hardware tooling).

One of the lessons learned in the six cases, is that it takes two to tango. BVP/PIPS competent teams are a prerequisite on both client side and vendor side. A knowledgeable supply chain is critical to the success. In some areas these are difficult to find. The case of the glass fiber enforced decorative prefab wall made this evident. Enough time must therefore be invested in market research to find potential competent suppliers (also because the experience is that the majority of suppliers invited tend not to participate in the BVP/PIPS process for different reasons) and then resources must be used to educate, educate and educate.

From a purchasing point of view the BVP/PIPS attracts suppliers who are experienced and prepared for starting projects with BN. BVP/PIPS does take some time from the Ballast Nedam organization. This is an investment the organization must get used to; the gain is so much greater in time, quality, risks and integral costs and having fewer disruptions in the execution phase.

The cases shown in this paper dealt with:

- Alteration of the “planning” criterion in BVP/PIPS for other business critical topics.
- Multiple demands packed in one single BVP/PIPS approach.
- Adaptation of the scoring weights and criteria.
- A cross-project indirect purchasing initiative, leading up to a IDIQ contract.
- A multi-vendor selection (best of the rest).

These issues were found to have a minimal impact. The BVP/PIPS process still worked. It led to:

- Increased transparency.
- Allowed participants in the supply chain to participate.
- Minimized the need for technical expertise of Ballast Nedam.
- Measured the vendor in terms of performance and price.
- Transferred the risk and accountability to the vendor.

There still is a long way to go, before BVP/PIPS is going to be the dominant approach for purchasing within Ballast Nedam. It still takes great time to get new projects, because people have a hard time to really understand and have to lose their old way of thinking. Clients, who demand this kind of offering from us, help in pursuing this kind of purchasing in the supply chain.
For the purchasing of cross-organizational needs of Ballast Nedam, BVP/PIPS is going to be the method used from now on.

References


Thompson I., Cox A.; & Anderson L. (1998); Contracting strategies for the project environment - A programme for change; European Journal of Purchasing and Supply Management, Volume 4, Number 1, 3 April, pp. 31-41(11).

Individual Business Travel at Boehringer Ingelheim: A Best Value Procurement Pilot

Marco van der Heijden
Boehringer Ingelheim, Alkmaar, the Netherlands

Jeroen van de Rijt, MSC
Scenter, Driebergen-Rijssen, the Netherlands

Problems in the delivery of construction are supply chain issues in the procurement area, and not caused by the complexity of the construction industry. In order to prove this, Best Value Procurement has been applied in procuring travel services within pharmaceutical company Boehringer Ingelheim. In this paper the authors propose that there are similarities in the procurement of services at BI and the procurement of construction services. It is proposed that the best value PIPS process makes a procurement officer a professional, able to deliver any service. The BVP PIPS test to deliver travel services increased value and performance and minimized the cost of the service. The conclusion is that the best value PIPS process has great potential to increase the value and performance in the delivery of other services.

Introduction

The delivery of construction services has been fraught with low performance (see e.g. Kashiwagi, 2009.) The construction industry has assumed that the solution to its low performance is caused by the following:

- The lack of technical expertise of the vendors requiring the client to have more technical expertise and management capability.
- The lack of understanding and inability to communicate between buyer/client and vendor.
- The complexity of the supply chain.

Construction has reacted to these assumptions by implementing solutions such as construction managers (CM@Risk), partnering, and integrated design and construction. The direction of these solutions increase the flow of information, require more parties to participate, and increases the risk of the client due to increased number of participants. The authors propose these assumptions may not be accurate and that the delivery of construction services may be no different from the delivery of any other service. In this paper the delivery of Individual Business Travel at Boehringer Ingelheim is described.

Boehringer Ingelheim (BI) is a global pharmaceutical company and is constantly in search for breakthroughs and innovation in medicine and treatments that add value to human and animal health and welfare. The BI group of global companies’ objectives and beliefs can be summed up in a single phrase: “Value through Innovation.” This vision has helped BI to build its strengths and make the most of its distinctive character. In a competitive and fast-changing world, the value of products, services and companies is constantly changing. Real customer value today can only be created by constantly developing new solutions and continuing to improve services and performance. Together with the concept "Lead & Learn", this vision drives BI’s corporate
Individual Business Travel at Boehringer Ingelheim: A Best Value Procurement Pilot

culture. BI first learned about the testing of Best Value Performance Information Procurement System (BVP / PIPS) from Scenter. While most tests in the Netherlands were being accomplished in construction (see the overview in the introductory editorial of Van de Rijt & Witteveen in this Journal), the authors felt that PIPS was not a technical process but an overall supply chain concept that could be applied to the delivery of any service.

The objective of the authors is to propose that the problems in the delivery of construction are supply chain issues in the procurement area, and not caused by the complexity of the construction industry. In order to prove this, tests need to be conducted in both construction and other service areas. Success of tests in other service delivery areas along with continued successful tests in the construction areas would help to confirm the hypothesis.

The authors first give an overview of Boehringer Ingelheim. Next, the similarities between BI’s delivery of travel services and the delivery of construction services are described, followed by the scope of the pilot project and the objective of the test. The procurement process used by BI (the version of PIPS process) is explained, as not all the PIPS tests in the Netherlands were able to use all the features of the original PIPS process (see papers elsewhere in this Special Issue). This is followed by a description of the pre-award process and implementation. The paper ends with an analysis, discussion and conclusion and recommendations.

Boehringer Ingelheim as a Company: the Need for Supplier Involvement

Boehringer Ingelheim’s business areas are Human Pharmaceuticals, covering the segments Prescription Medicines, Consumer Health Care, Biopharmaceuticals and Operations (Pharma Production and Chemical Production) as well as Animal Health, with core business segments in food-producing and companion animals. BI has more than 41,500 employees in 142 affiliate companies worldwide, research and development (R&D) facilities at 12 sites in seven countries and production plants in 15 countries. R&D expenditure corresponds to 21% of its net sales and its headquarters is at Ingelheim, the German town where the family-owned company was founded in 1885.

The history of BI is one of traditions of innovation. BI was founded by Albert Boehringer (1861-1939) in Ingelheim am Rhein (Germany). From its beginnings in 1885 when it employed just 28 people in Nieder-Ingenheim, the company has become a global enterprise. As part of research and development activities for innovative drugs, the company focuses primarily on the therapeutic areas of cardiovascular disease, respiratory diseases, diseases of the central nervous system, metabolic diseases, virological diseases and oncology.

The major goal for procurement within BI involves how to get the market, (i.e. external suppliers) aligned with its business processes in such a way that they are considered truly the “best value”. Market developments tend more and more towards highly specialized business, competing with each other through supply chains or supplier networks. Only those companies having a sustainable competitive advantage over their competitors in the supply chain will survive. In several aspects, procurement can play a strategic role. Two years ago, procurement was still a rather reactive operational department. Since then, it has rapidly changed into a more
pro-active and semi-professional department. In order to further develop towards a truly professional function and due to the limited (financial) resources to develop or to hire professional staff, BI is looking for different options to compensate for the lack of in-house expertise. Broader expertise in process and change management and optimization of innovative power from the market, instead of in-depth product or category expertise, will enable BI to achieve the desired level of expertise and thus support the success of BI’s business.

In view of global market developments, Boehringer Ingelheim will have to professionalize procurement and develop a world-class supply base to keep pace with such trends. Obviously, not all suppliers will contribute evenly to BI’s future and only when procurement differentiates the various business relations properly, will BI be able to focus and succeed. The constant quest for breakthrough innovation and the accompanying search for added value to BI’s business proposition has a direct linkage to a lean approach of the supply chains. In every network of suppliers, a continuous challenge lies in identifying added value to the products and services BI produces and sells and/or removing non-value adding steps from the processes throughout the chain.

Theories and models referred to in this report may be used in practice within BI to support the aim for procurement professionalization. The Best Value PIPS Procurement methodology supports BI in the search for innovative, qualitative and cost-effective suppliers by attaining those suppliers considered the best value in the market. The model supports all this without the direct need for a full-size procurement function with all the usual in-depth expertise.

**Similarities Between the Delivery of Construction Services and Other Services**

It was identified by BI that there are the following similarities in the procurement of services at BI and the procurement of construction services:

- The procurement agents were required to have technical expertise.
- The procurement agents were required to make decisions.
- Procurement agents relied on technical expertise and specifications from experts who were not accountable for the performance of the delivered services.
- The specifications used minimum standards and were price based, the effect of which was continual lowered service performance.
- The vendor services did not have accountability for non-performance.
- Performance was defined as meeting minimum standards.
- There was no identification of value.
- There was no motivation to measure or improve value and performance.

As the client/buyer of services, BI was forced to be the decision maker to determine if the vendor services being provided met the conditions of the contract. BI did not want to go in this direction when dealing with Travel Services. Instead they wanted a cadre of “professional” procurement officers who could deliver any service. They also required their procurement agents to be able to optimize the value of the supply chain by identifying the value of the vendors delivering services
to BI, and increasing their value and performance over time. The authors’ objective was to take the model of an efficient organization and overlay this onto a supply chain which would:

- Minimize the need to manage and control.
- Minimize the flow of information between buyer and vendor, thus increasing the accountability of the vendor.
- Creating an environment of performance measurement.

The best value PIPS process and structure was thought to be a tool to reach this goal, as it is different from traditional procurement processes in the following ways (Kashiwagi, 2009):

- It minimizes decision making by the procurement agents.
- It forces the vendors to differentiate themselves in terms of dominant value.
- It transfers the risk and responsibility of performing to the vendors.
- It keeps the vendors accountable.
- The contract becomes a performance based contract instead of a specified contract using minimum standards.
- It assumes that the vendor is an expert, who can pre-plan and manage and minimize the risk that they do not control.
- It minimizes the need of the buyer/client to have technical expertise.
- It increases the value and performance of the service in terms of cost, time, quality, and customer satisfaction.

The authors propose that the best value PIPS process makes a procurement officer a professional, able to deliver any service (see also Kashiwagi, 2009). Under this assumption, the delivery of travel services becomes no different than the delivery of construction or other services. This hypothesis requires two steps: to prove that the best value PIPS process works in delivery construction services, and works in delivering other services. The best value PIPS system has been tested successfully in the U.S. on construction, professional services, and other services (Kashiwagi, 2009.) Other clients are testing PIPS to deliver construction services in the Netherlands (see papers in this Special Issue.) The purpose of this pilot project within BI is to test it on other services to confirm that the previous case study resultants can be reproduced in the Netherlands.

A major motivation for this test is that the tests of PIPS in construction are being run in the public sector and cannot use the full capability of the PIPS (see papers of Van Leeuwen and Apostol in this Special Issue). The PIPS process has been modified to fit the perceived requirements of European law. As in all cases, the interpretation of the law leads to various conclusions (as seen in the different approaches by different organizations of the PIPS tests in the Netherlands).

The PIPS process used in this pilot project resembles 100% the pure methodology of Kashiwagi (2009). During the award process (known as selection process in the US) the following criteria were used:

- Past Performance
- RAVA plan
The pre-award period was used after the ranking to make the selected supplier pre-plan the whole project delivery. Next, the vendor was invited to write the contract. Below the scope of the project is described after which the procurement process is outlined in more detail.

The Scope of the Pilot

“Individual Business Travel (IBT)” was chosen as a first pilot for applying BVP PIPS. The main reason for this choice was an internal analysis which had already showed possible process improvements. BI has a process implemented for IBT that goes back as far as the 1990’s. No optimization has taken place these last years and the employee involved will reach her pensionable age shortly, making this an ideal show-case for an innovative procurement process. The scope involves some 450 tickets annually of which 90% have an EU destination. Minor services such as hotels and train tickets are also included. Total value of the services and travel costs combined are approximately € 375K per year, (based on previous months) including management fees for the travel agent. A special project team was created to do the selection and shown the full presentation on BVP PIPS. This team included a Senior Buyer, the current Travel Coordinator, an employee of the Group Travel department and a frequent traveller. The author was the Contracting Officer of the project.

Procurement process

A short market survey led to a selection of 5 potential suppliers, who were invited for an educational meeting at BI on November 12th, 2009. Upon arrival of all parties, one could feel some tension in the room. Despite the explanation upfront, parties were not used to entering a selection process plenary; seeing and knowing each competitor was a very different experience.

At the opening of the session, the Contracting Officer explained to all that the BVP method was also new for BI, which helped to break the ice a little and take away some tension for an unknown selection method. The theory of Best Value Procurement was explained. When asked their first impression, two of the suppliers confirmed they had some experience with selection based upon “value” for the Dutch government (EC-tender) based upon “Economically Most Favorable Offer” (in Dutch EMVI) where aspects beside price were taken into account (see also the paper of Van Leeuwen in this Special Issue).

Although all suppliers were enthusiastic, the project team was a little surprised that no questions were raised at the end. While this could mean the process was clearly understood, a more probably explanation is that questions about the method and procedure would surface after additional thought and discussion. The suppliers did confirm, however, that they had never seen a method explained as clear and transparent.
According to the methodology, various criteria were used to evaluate the different proposals. The weights of the different criteria that were used were as follows in Table 1:

Table 1

**Proposal Criteria**

<table>
<thead>
<tr>
<th>Weights</th>
<th>RAVA</th>
<th>PPI</th>
<th>Interviews</th>
<th>Planning</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>5%</td>
<td>30%</td>
<td>5%</td>
<td>30%</td>
</tr>
</tbody>
</table>

The suppliers had until the 12pm on the 28th of November to submit their RAVA plan, a price, a plan and references (past performance). Although all of the suppliers seemed enthusiastic, two of them raised some questions during the preparation period. The first raised a number of detailed questions on the current process within BI. For the project team the goal was not to simply look at the current process but rather to identify the “best valued process” for BI from the proposals. The other supplier raised a question about details in our travel policy. The reply for this concern was that this would be relevant only in the pre-award phase, where this specific supplier would have an opportunity to influence or revise the travel policy. As previously suspected, these questions revealed a lack of complete understanding of the PIPS process.

BI had decided to incorporate filter 1 (Past Performance) into the proposal to be received during filter 2 (rating the RAVA plans & planning) and to make the references an integral part of the proposal, which would help to minimize the risk of an unjustified supplier being chosen. The combination of filter 1 and 2 into one step would save BI sometime in the process. The reference format was predetermined by BI and a maximum of 2 references (to be completed by their clients) was allowed per supplier.

Four proposals were received on time on Friday the 28th of November with one received late. After an internal discussion and check with the respective supplier, the BI team decided to accept this last late proposal anyway because BI is looking for the best (not only the most timely) supplier. Additionally, BI recognizes this is a new process for all involved, including the project team. All proposals contained a maximum of 7 pages (2 for references, 1 for price & planning and 4 for RAVA-plan), in accordance with the templates.

Evaluation and scoring forms were also prepared upfront to standardize the internal rating process. The price was known exclusively by the Contracting Officer and kept confidential. Individual scorings of the project team members on “planning” and “RAVA plans” had to be completed by the 18th of December, after which an average score for all suppliers was calculated. In this meeting the next step (the interviews) also was discussed.

Three suppliers really understood the principle and used the RAVA-plans to elaborate on the potential risks and opportunities, while two suppliers had a different approach. One of them explained in the cover letter that they could not really put their Unique Selling Points in our format and that they would be glad to explain verbally why they were supposed to be the best-in-
class”. This explanation is antithetical of the methodology of this format, which excludes “marketing-smooth-talk” and instead promotes plain and simple explanations of their values. This supplier scored far lower scores than the others and was excluded from further steps.

The other supplier submitting a different RAVA-plan explained in rather “general” terms that they were the best, had the best staff, the best systems and services and that they foresaw just one risk at that moment, which was a credit risk of BI paying them late. Because of their highly suitable references which were comparable to the BI business, the supplier scored average. The BI team decided to keep them in the race and invite them as the first supplier for the interviews (whereas the other three had the possibility to choose out of three timeslots).

Based upon the RAVA-plans the BI team prepared the questionnaires for all interviews. This questionnaire contained a list of questions, which would be raised in each interview, regardless of the position or supplier. Furthermore, some questions were supplier-specific because of issues found in their respective RAVA-plan. Obviously, this questionnaire was not disclosed to the suppliers until the interview itself. Interviews with two key persons were identified upfront, one to be with an account manager who would cover the general process of the contractual cooperation and sales options and another with a booker from within the team that would be assigned to BI to cover all details about the booking process itself.

Within the team it was quickly decided the lead interviewer would be the Senior Buyer involved. Not only did this person have the most experience with “talking” to suppliers, he has the “advantage” of being inexperienced in the field of (coordination of) travel bookings itself, making him an ideal interviewer to clarify the process. The BI-team decided also that the other three team-members (two people involved in bookings and one traveller) would be allowed to interfere when necessary on a specific topic. After a very brief introduction by the Contracting Officer on the interview set-up, the Contracting Officer wasn’t involved in the actual interview, instead watching the process, making notes, keeping the time and assisting and guiding the candidates about the logistics of the interview process.

All interviews went smoothly and did not take more than 30 minutes on average. Candidates were very frank and open in answering the questions, which confirmed to the BI-team the setting was “safe” enough, especially for those candidates who normally are not in direct (face-to-face) contact with their customers. Very open replies varied from “I was not involved in the RAVA-plan, I heard only 2 days ago I was supposed to join today” to “I would not use our option offered for a dedicated team (at an extra cost) because the rest within the team are just as quick or even quicker in answering all of your questions anyway.”

All scores were discussed in a meeting with the whole team on the 21st of January. Figure 1 shows all scores of all suppliers.

With regards to the planning criterion, the team decided that as long as the implementation would be proposed within a month, all suppliers would receive the same points, mainly because BI had no pressing deadline and plenty of time to choose and prepare for a possible switch of supplier. Proposals varied between two to four weeks implementation time, thus no dominant “distinctive” information was derived from this criterion.
It was surprising for the project team to discover that despite the different angles of the suppliers, the interview scores were quite similar. One of the suppliers was absolutely number 1 in the ranking. Numbers 2 and 3, although close to each other, were distinctly different from number 1. Supplier number 4 was also clear and unanimous.

![Figure 1: Scores of all Suppliers on all criteria (prices not disclosed)](image)

The preferred “best value” supplier (without price effect) was clear and unanimous after all qualitative criteria. Including the price effect, this preferred supplier was still the best overall. Although at first not the cheapest, they remained clearly within the predetermined acceptable price variation of 10% (in fact: the best value vendor was 4.7% more expensive than the next vendor). This acceptable price variation was set up front to confirm to all suppliers that BI was indeed willing to choose the “best value” as long as this supplier would be within budget and not more than 10% more expensive than the cheapest supplier. When suppliers 1 and 2 of the ranking were both corrected on price (with a minor expected variable cost factor for excluded and difficult to calculate services) it was even clearer because the preferred “best value” supplier was now also the cheapest. Thus it became an easy choice, acceptable for all.

Based upon the total scoring model the BI team produced a so-called “selection advice”, a document sent for approval to the steering committee. This document closes the selection stage and asks for approval to enter into the contracting stage (i.e. pre-award phase). Once approved, discussions started with the selected “best value” supplier on commercial issues like the “contract”, the SLA and KPI’s, reporting, invoicing, etc. Also more practical topics have been discussed within the teams involved, such as the implementation plan, the communication plan, mutual contact persons, training of users for the On-line Booking Tool and an introduction of the supplier within BI to facilitate and smooth out the transfer of the IBT-services from one supplier (the current one) to the new one.
Potential savings are estimated at approximately € 85K for a 3-year contract, which is almost 70% savings compared to the original budget for the indirect services only, excluding actual ticket costs. Although one could say the budgeting was not very accurate, several people within BI confirmed this would be a fair budget. So in that sense, this method has proven to be not only a qualitative success (identify the “best value”) but also a commercial success.

**Pre-Award Period**

After the choice for the best value offer was made, that supplier moved on to the pre-award phase and was given some time to elaborate all the required details of the project. This was not to look for possibilities to charge extra costs, but merely to preparing themselves for a smooth and best possible implementation of the contract. In this stage, the supplier was also confronted with a list of all possible risks from the RAVA-plans (including those from other suppliers), for preparation. This stage has resulted in a Pre-Award document by the supplier as a basis for the contractual execution.

Another important topic in this stage is the actual drafting of the contract between parties involved. In accordance with the methodology, (and despite some fierce internal discussions), BI had chosen to allow the supplier to draft the contract document. Upon close examination of the contract, BI concluded that all major legal issues were appropriately covered. Although these issues were identified and described from the supplier’s perspective, this contract was deemed acceptable for the relationship. Here also, the initial reluctance to leave the drafting of the contract to the supplier has proven to be a more theoretical obstacle. In practice, the ‘best value’ supplier is also capable to draft a proper contract document, best describing the services agreed upon whilst taking into account mutual interest, risks and obligations.

Finally, a visit of BI personnel to the supplier’s premises has taken place to meet the respective booking team members of the supplier. This meeting covered both operational and commercial topics to be clarified before signing the contract to provide involved personnel of both parties a better understanding of the open points. For the Contracting Officer it was good to hear practical points on the booking process and for the booking teams it was good to hear where commercial or contractual issues lay. Instead of separating the commercial from the operational issues, the joint discussion helped to give all involved a better understanding of the intertwined aspects of the relationship.

These mutual talks between operational and contractual persons helped especially to maintain the feeling of a joint effort. Instead of operational staff talking about contractual staff (and vice versa), one could now immediately talk to the other stakeholder in the process.

**Results and Analysis of the Hypothesis**

The test was successful due to the following:
BI increased its value while simultaneously lowering the cost of the service with a saving of 70%, while improving value (more responsive, easier to use, less steps taken, improved usage of new technology, etc.). This is an outcome that could not have been reached when using a traditional procurement process.

- The procurement function minimized the need for technical expertise of the procurement officer.
- The time spent was lower than normal for the procurement agents. Although the other stakeholders in the pilot had to spend some more time (e.g. in interviews) than they were used to, their effort has helped to get buy-in and acceptance of the selected supplier.
- Improved transparency to better align all parties involved in the supply chain. Internally, instead of a procurement “black-box” with an unexpected outcome, this selection process was very transparent to the internal stakeholders as well.
- The structure of PIPS allowed non-technical participants in the supply chain to participate in the selection of the vendor, thus integrating the supply chain functions and making the performance of the vendor more transparent. Internal stakeholders were involved during the full selection and implementation process and all aligned in the final choice of the ‘best value’ supplier.
- The use of the pre-award period was very successful. The steering committee was not required to make a final decision between contradictory requirements and interests of different stakeholders; instead everyone was aligned.
- Allowing the vendor to write the contract did not increase the risk of the client.

The results of the BI travel services infer that:

- Procurement of services is not a technical issue.
- Risk can be transferred from the client to the vendor.
- Management, direction, and control can be minimized by minimizing technical decision-making and using dominant performance information.
- An environment can be created that forces vendors to improve value and performance through efficiency rather than cutting cost to meet minimum standards.

The results of this test give evidence that the best value PIPS concepts can be implemented in the delivery of services. This confirms the test results in the U.S. in non-construction areas. This test of procuring Individual Business Travel also shows the potential value of the pre-award period, and in allowing the vendor to define their own contract.

**Conclusion and Further Implementation at Boehringer Ingelheim**

The BVP PIPS test to deliver travel services increased value and performance and minimized the cost of the service. The process also:

- Increased transparency.
- Allowed participants in the supply chain to participate.
Minimized the need for technical expertise of the procurement officer and the selection

group.,

Measured the vendor in terms of performance and price.

Transferred the risk and accountability to the vendor.

Due to the above results, the authors propose that the best value PIPS process has great potential
to increase the value and performance in the delivery of other services. The authors also
recommend the use of the pre-award period and to have the vendor write their own contract. In
this way the need for the client/buyer to manage, direct, and control the vendor is minimized.
These test results confirm that the results from the U.S. can be duplicated.

BI is currently expanding the use and testing of best value PIPS in other areas. The success of
this first pilot project on IBT has resulted in BI now starting more BVP projects, in areas such as
corporate training (for HR), highly specialized temporary project staff (for the Medical division)
and possibly also for Point of Sale materials (for the Marketing and Sales division). These
projects have already started and again the suppliers and internal stakeholders involved all
appear to be very enthusiastic about the methodology. With an accumulated spend value of
approximately 2,2M€ these projects have a direct impact to BI’s business in the Netherlands, not
only with regards to its indirect processes (IBT and training) but also, (and therefore all the more
interesting for professional procurement) within its core business processes (execution of
medical studies by means of specialized external project expertise and the co-design and supply
of Sales materials).

More and more people within BI are getting introduced to the methodology of BVP. Pending the
final results of such tenders/projects, BVP is expected to become a standard procurement tool
used to further professionalize BI’s procurement function and thereby contribute directly to
bottom-line results. Because of its innovative method and support to the business goals of BI, the
BVP methodology will enable procurement to grow from an operational/tactical level to a more
strategic level within the business.

Finally, BI has to report its performance, goals and successes to Corporate Office. The BVP
method will most probably be reported as an additional and powerful tool to support further
professionalization of procurement within BI globally. Hopefully this will lead to further
opportunities for the Dutch procurement team to present or show the methodology and results
achieved in an international BI setting.

References

Apostol, R. (2010) Legal Perspective: Is Best Value Procurement achievable within the
framework of the ARW 2005 (in this Special Issue)

Kashiwagi, D. (2009); A revolutionary approach to project management and risk minimization;
best value performance information procurement system. PBSRG, Arizona State University
Van de Rijt, J & Witteveen, W (2010); Guest Editor’s introduction to Special Issue: Best Value Procurement in the Netherlands (in this Special Issue)