

CONTRACTING FOR PERFORMANCE - THIRD GENERATION PERFORMANCE BASED CONTRACT (PBC)

Datuk Ir Kamarulzaman Zainal, Lt Col RMAF (Retired) PEng FIEM

INTRODUCTION

The Malaysian Government, as an asset owner, invests huge sum of money to develop the nation as part of its service and social fulfilment to the *rakyat*. In certain sectors, the investments involve acquisition of strategic moveable assets that are expensive, sophisticated and complex, having a long life cycle. This is especially prevalent in the defence/security and transportation sectors where fleets of aircrafts, naval vessels, armoured vehicles, rolling stocks, ships and boats are purchased from time to time for various agencies. Private asset owners do the same but largely for business purposes.

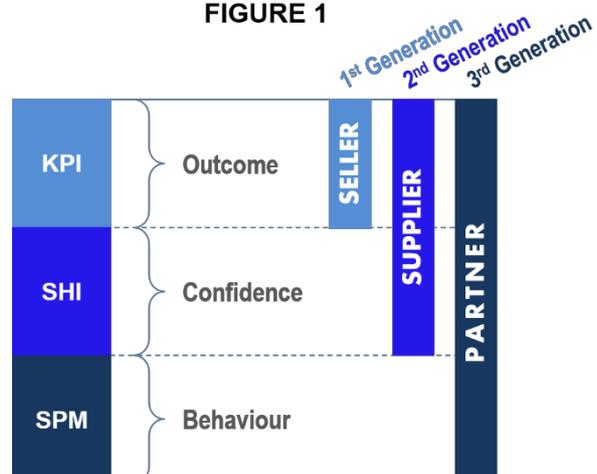
In ensuring the high value investments provide the expected return, Government assets such as the above platforms/systems must be managed and maintained efficiently so that they can operate at optimum level to perform the intended purpose throughout their entire life. Sustenance of systems capability (Capability Sustainment) is therefore an important function that an asset owner must undertake, either internally or through outsourcing. If the function is to be undertaken internally, the associated capability sustainment costs will be borne directly by the owner. If it is outsourced, the owner can procure the services from a contractor to perform the required maintenance, repair and overhaul (MRO) as well as other logistic support tasks on the whole fleet, or sub-system of the fleet, or certain parts/components of the fleet.

Most Government contracts related to through life support of moveable assets today are transactional or prescriptive-based where payment to the contractor is determined based on “process” i.e manhours and materials consumed to perform the work. However, after successful implementation on several contracts since 2012, the 3rd Generation PBC is gaining the trust of government buyers as the preferred method for contracting for performance.

PBC GEN 3

There is nothing new about PBC as the basic methodology has been used in many contracts previously. KPI (Key Performance Indicator) remains the main performance measure in a PBC that will determine how the contractor performed and how they will be paid. The 3rd Generation PBC however, has new features that are not yet exposed to many. The evolution of PBC as shown in Figure 1 has come to a point where additional performance measures are introduced to evaluate other dimensions of a

FIGURE 1

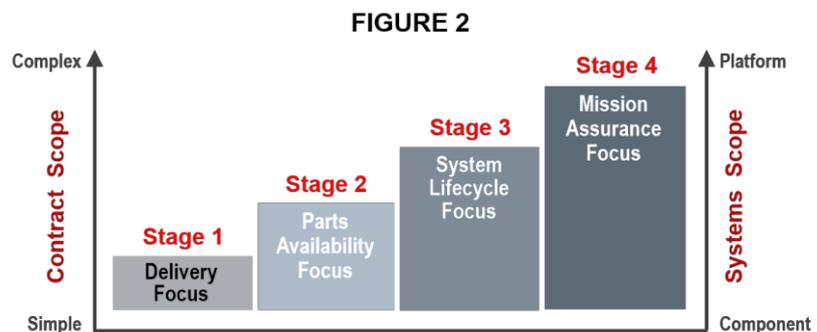


contractor’s performance in order to transform the contractor from a mere “seller” to “supplier”, and ultimately “partner” to the buyer. The new measurements are;

- **SPM** (Strategic Performance Measure) - a qualitative measurement which is not directly related to payment to determine the long-term behaviour of the contractor; and
- **SHI** (System Health Indicator) - a qualitative measurement which is not directly related to payment to determine the confidence that the contractor is continuously capable to deliver its contractual obligation.

Using the combination of KPI, SPM and SHI, a PBC has an effective contractual tool to objectively measure the overall performance of a contractor over a period of time. Coupled with a “report card” system, the consequences of a contractor’s achieved performance can be objectively analysed and subsequently tied to appropriate reward and/or remedy provisions. These advancements have made PBC a relational contract that emphasizes not only on delivery, but also on the relationship of the contracting parties.

In terms of application, there are four stages of 3rd Generation PBC that can be used, depending on the complexity of the contract (work) scope and the systems’ scope.



As shown in Figure 2, a simple contract which only involves maintenance of components of a platform/system, require a Stage 1 PBC that mainly focus on “delivery”. On the other extreme, a complex contract that covers a fleet of a platform/system will require a Stage 3 or 4 PBC. At these stages, the contract outcomes are focused on system-level availability and mission assurance respectively. Depending on the depth and breadth of capability sustainment function to be outsourced, a PBC can have a combination of stages in a single contract.

METHODOLOGY

Performance Management Framework (PMF) is the central feature of the 3rd Generation PBC. For a capability sustainment contract, PMF is developed based on the buyers’ requirement determined by a group of people representing various stakeholders that have direct interest on the platform/system. The purpose of PMF is to link the required capability-based outcomes to contractor performance and subsequently link contractor performance to a range of predetermined rewards and remedies. Typically, when developing a 3rd Generation PBC, PMF is to address the following elements:

Contract Outcome

Stakeholders must determine and agree on the outcome that is required out of a capability sustainment contract. Contract Outcome is basically a statement defining

“what success looks like” in terms of timeliness, quality, quantity and consistency. The outcome is derived in reference to the current applicable policies, operational concept or doctrines, relevant authoritative instructions and others. As an example, for a high value moveable asset such as a fleet of 15 aircraft, a successful sustainment contract would be “having 13 serviceable aircraft at 8am everyday” throughout the duration of the contract.

From the desired Contract Outcome, the Key Result Areas (KRAs) for the contract will then be determined. The KRAs are factors that contribute to the success of a contract which later form the basis for the buyer to measure. In the case of a fleet of aircraft, the KRA may include the following:

KRA	Description
Safety	Commitment in complying with legislation/regulation and all aspects of material safety through proactive management of safety hence enabling effective and successful outcomes.
Cost	Understanding the total cost of ownership and the cost drivers to optimally balance requirements with budget as well as promoting savings from increase in service efficiency.
Availability	Providing the platform/system that is in a known state and ready to meet operational requirements.
Reliability	Providing the expected quality of workmanship in order to maximise successful outcomes and platform/system availability by minimising failures and other unexpected incident.
Maintainability	Understanding scheduled and unscheduled maintenance in order to maximise platform/system availability by minimising repair times / turn around times.
Supportability	Ensuring effective/efficient delivery of maintenance and engineering services to maximise platform/system availability and optimally balance requirements with budget.
Behaviour	Consistency in service delivery and effort in aligning long-term delivery of platform/system support through continuous improvement initiatives enabled by collaborative relationships.

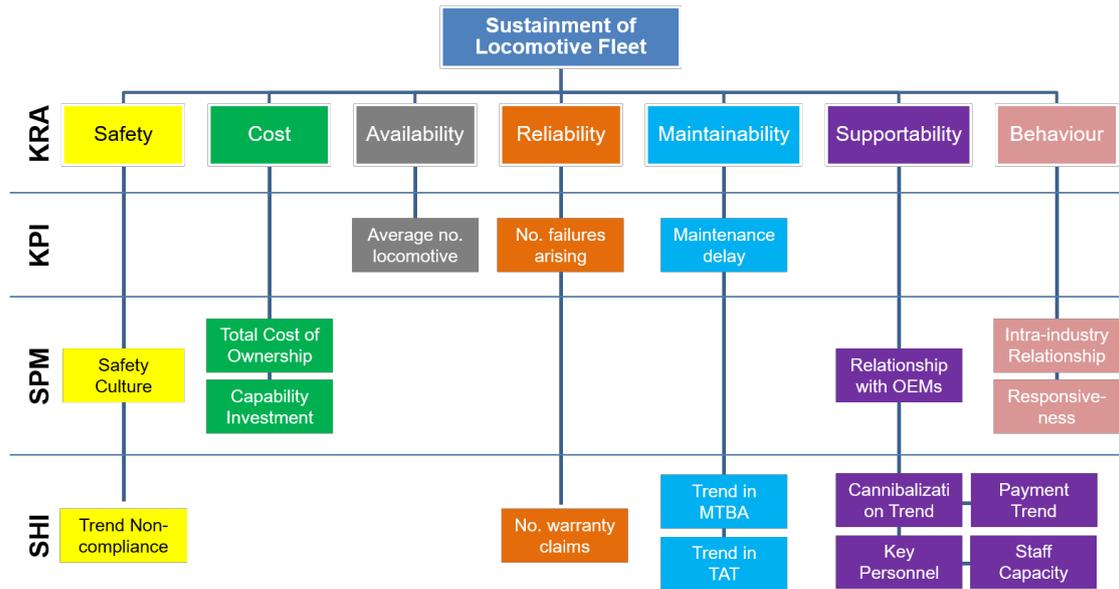
Performance Measures

Measurements used in a PBC are to define the buyer’s expectation in terms of the contractor’s performance. The measures are formulated based on the need to verify the achievement of each KRA identified earlier. Performance measures for capability sustainment PBC are normally centered around **availability** of assets which, if combined with **reliability** describes the capability to undertake current tasks, whereas if combined with **maintainability** and **supportability**, it describes the capability to undertake future tasks.

A measure, whether to be assigned as KPI or SPM or SHI, depends on the Contract Outcome as well as the contractor’s behaviour that the contract is trying to shape. As a rule of thumb, if a measure has no direct impact on Contract Outcome or has no direct influence on payment and is qualitative in nature, then it should either be an SPM or a SHI.

Once all performance measures have been identified for each KRA in a PBC, it is summarised as the “performance matrix” for the contract. An example of a performance matrix for sustainment of a fleet of locomotive that comprises three KPIs, six SPMs and eight SHIs is as shown in Figure 3.

FIGURE 3



Performance Levels

The level of performance contractually required to be achieved by a contractor for each performance measure must be made clear in a PMF. For KPI which is quantitative, the required level is determined either top-down i.e by referring to official documents that states the expected performance of the system; or bottom-up i.e based on historical data, mathematical prediction or professional judgement. An example of performance level assigned to a set of three KPIs is as follows:

- KPI-1 Availability: average 85% of fleet available at 8am per month
- KPI-2 Reliability: maximum 5 x failures per month
- KPI-3 Maintainability: maximum 5 days maintenance delay per month

It is important to ensure that the calculation for all measures are full proof to avoid misinterpretation. As an example for KPI-1 above, let us assume availability data involve the actual state of a fleet of 15 locomotives monitored on a 24 hour basis. The Monthly Fleet Availability average, which is the actual measure of performance for KPI-1, is equal to the fleet’s Daily Achieved Availability divided by the number of days in the month, as calculated per formula below.

$$\text{Monthly Fleet Availability} = \frac{\text{Daily Achieved Availability}}{\text{No of days in the month}}$$

where;

$$\text{Daily Achieved Availability} = \frac{\sum_1^{15} \left[\frac{\text{hours available}}{24 \text{ hours}} \right]}{15}$$

Depending on the relative importance of the KPIs, appropriate weightage is assigned to each KPI. In the above example, if KPI-1 is twice as important as KPI-2 and yet, KPI-2 is also twice as important as KPI-3, the assigned weightage for the KPIs will normally be 50%, 30% and 20% respectively. Assignment of relative weightings should be made simple by using absolute value of not less than 5% increments.

In the case of SPM and SHI which are qualitative measures, the performance level for each measure can either be measured using the scored or unscored method. Scored method is based on assigned grading such as ‘superior’, ‘good’, ‘fair’ and ‘poor’, while unscored is based on ‘satisfactory’, ‘unsatisfactory’ or equivalent. The traffic light colours (red, yellow, green) are commonly used to simplify the assessment process in gauging the level achieved by a contractor on SPMs and SHIs measured items.

Unlike KPI which is related to payment and measured monthly, SPM and SHI have their own measurement intervals. Due to the strategic nature of SPM, its’ frequency is normally one measurement every six month, while SHI’s once every quarter (3 months) is sufficient. Example of a SHI performance measure is as follows:

PERFORMANCE MEASURE PROFILE				
Key Result Area	Reliability	Measurement No.	SHI-2	
Performance Description	Trend in MTBF	Frequency	3 Monthly	
Purpose				
To determine the frequency of unscheduled maintenance of the system, its sub-systems and equipment and monitor the rate of occurrence throughout the duration of the contract.				
Measured Items			Score	
1	Based on the achievement of the KPIs in the last quarter, has the frequency of unscheduled maintenance increased? <ul style="list-style-type: none"> • Aircraft fleet • Repairable Items / Components 	N	-	Y
		N	-	Y
2	Has the CONTRACTOR made any serious attempt to anticipate defects before it happened or to propose modification (or any design change) to reduce the frequency of unscheduled maintenance hence, increase the reliability of the system?	Y	-	N
3	Based on the achievement of KPI-2 in the last quarter, has the CONTRACTOR developed the necessary competency to handle most of the arising unscheduled maintenance within reasonable turn around time?	G	F	P
4	Does the CONTRACTOR use the lessons learnt from the arising unscheduled maintenance to improve the scheduled maintenance tasks?	Y	-	N
5	Does the CONTRACTOR take the opportunity to resolve “deferred maintenance” during the conduct and within the timeframe of scheduled maintenance?	Y	-	N
6	Is the CONTRACTOR keeping track of the reliability issues and makes an effort to communicate with the appropriate OEMs or Design Authorities?	Y	-	N

Price and Payment

Under normal circumstances, payment to a contractor for services rendered under a contract is based on the price stated in the contract (Contract Price (CP)). Unlike conventional contract where payment is usually made in full, a PBC payment is subjected to “at-risk” margin that is modifiable. At-risk margin, a percentage determined to be equal to the contractor’s profit margin, is the maximum amount at-risk to the contractor that will be deducted as remedy due to under performance. This means, in a typical PBC, payment to the contractor is the sum of “amount not subjected to performance” and “performance payment for each KPI”.

Another important feature of 3rd Generation PBC is the use of payment curve for each KPI. A typical performance curve, as shown in Figure 4, is the means to relate the actual “Achieved Performance” to “Adjusted Performance Score” (APS). In other words, an APS is an expression of performance as a percentage of the Required Performance Level. As shown in this curve, if Achieved Performance is at the required performance level or above (within Band A), the APS value will be 100%; if within Band B, APS is between 80 to 100; if within Band C, APS is between 0 to 80, and so on. The design of the performance curve and the colour coding for each Band are interpreted as follows:

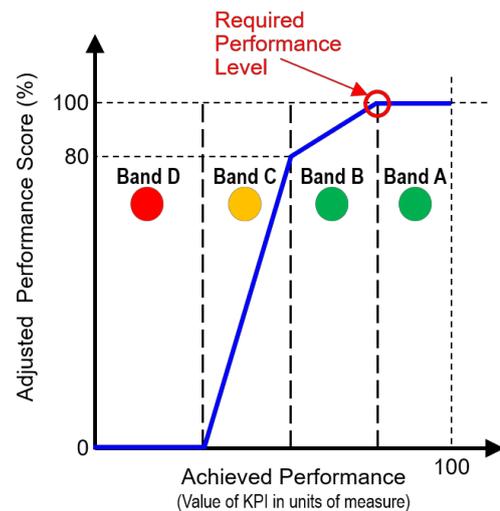


FIGURE 4

Band A (Good) - performance equals or exceeds the Required Performance Level. If over-performance is of value, may specify incentive to be included in the Performance Payment, otherwise APS is set to 100%.

Band B (Fair) - performance slightly less than the Required Performance Level. It allows for minor variations in APS but still have small and tangible impact on the value of the services. The slope discourages performance to fall further below.

Band C (Bad) - performance may be tolerable for short term but unsatisfactory in medium/longer term due to diminishing value of services. The slope will cause APS to reduce rapidly as performance degrades. May trigger remedies under the contract.

Band D (Poor) - value of services is considered negligible since the buyer's ability to attain the required outcomes is significantly affected. Regardless the Achieved Performance, APS is set at 0%. May trigger further remedies under the contract including LD.

Although the focus is on at-risk margin as the method for payment deduction, PBC does not exclude the provisions for Liquidated Damages (LD). At-risk margin does not replace LD, in fact, LD is considered a KPI with another name. Application of LD in a PBC is where there is no value in the level of service provided by a contractor under the contract. At this point where damage has occurred, an alternative method to achieve the Contract Outcome is required.

Putting into perspective, LD in PBC is the compensation to be borne by the contractor to allow the buyer to pay another party to perform the service and achieve the required outcome. For the Government, the loss suffered due to significant under performance by a contractor is sometimes difficult to quantify accurately in financial terms due to the non-commercial nature of some of the services it provides (eg. defence & security related services). Notwithstanding the same, the value of the loss must be objectively estimated and imposed on the contractor. In response to the comments made by *Jabatan Audit Negara* who audited and requested *Jabatan Bomba dan Penyelamat* to further improve its PBCs a few years ago, the current LD provision employed in 3rd Generation PBC allows the Government to deduct beyond at-risk margin, now up to 60% of CP.

On order to summarise the price and payment mechanism in a PBC, let us consider the following example: A PBC at-risk margin is determined to be 20%, it has three KPIs with assigned relative weightings of 50%, 30% and 20% respectively and put in force one LD under KPI-2. The payment formula for this PBC is therefore:

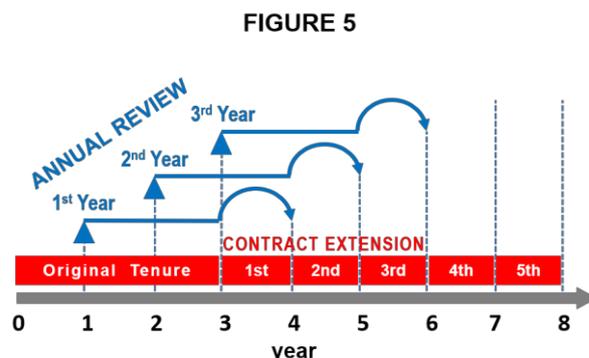
$$\begin{aligned}
\text{Payment} &= \text{Amount Not Subjected to Performance} + \text{Performance Payment (PP)} - \text{Total LD Amount} \\
&= 0.8 * CP + \text{(PP for KPI-1) + (PP for KPI-2) + (PP for KPI-3)} - \text{LD}_{\text{KPI-2}} \\
&= 0.8 * CP + 0.2 * CP + [(0.5 * \text{APS}_{\text{KPI-1}}) + (0.3 * \text{APS}_{\text{KPI-2}}) + (0.2 * \text{APS}_{\text{KPI-3}})] - \text{LD}_{\text{KPI-2}}
\end{aligned}$$

Rewards and Remedies

The 3rd Generation PBC is designed not only to allow payment for performance, but also to influence the contractor’s behaviour. As achievement of a particular behaviour is linked to both positive and negative consequences, the “carrot and stick” approach is employed to motivate commitment and incentivise the contractor in a positive and negative manner. The types of rewards and remedies that are commonly used in PBCs today are as follows:

REWARD	REMEDY
<ul style="list-style-type: none"> ▪ Performance Payment ▪ Pain Share / Gain Share ▪ Incentive Payment ▪ Award Term / Tenure Extension ▪ Future Work ▪ Recognition Scheme 	<ul style="list-style-type: none"> ▪ Withhold Payment ▪ Stop Payment ▪ Remediation Plan ▪ Liquidated Damages ▪ Contract Termination

The behaviour that PBC is trying to drive through the reward and remedy mechanism is for the contractors to deliver their service in accordance with the performance level specified in the contract. As the most damaging form of remedy, contract termination is the possibility that most contractors will try to avoid. For good performing contractors, contract tenure extension is the most effective reward as it brings lasting business, organizational stability and reputation. Under 3rd Generation PBC, “rolling wave” Award Term model is used since it is a fair option. As shown in Figure 5, rolling wave model is awarding tenure extension on a yearly basis immediately after contractors’ performance has been reviewed and verified through a formal annual review process.



Performance Implementation Plan

Immediate implementation of a PBC is sometimes unnecessary and can be unfair to the contractor. Although contracting parties may have concluded the contract negotiation and agreed on the PMF, in certain circumstances, PBC requires a period

of time after the commencement of contract start date to allow personnel of both parties to get used to the reporting and scoring requirements and to enable uncertainty regarding performance levels be resolved in order to avoid initial unrepresentative performance discrepancies.

In order to enable contracting parties to smoothly transition into PBC, Performance Implementation Plan (PIP) is a provision that facilitates gradual introduction of performance measurement regime until a performance baseline is established, consistent with the ramp up of contractor services under the contract. Where the contract does not require a ramp up, or ramp up is of short duration, or when a contractor has previous experience in implementing a PBC, then PIP may not be required.

Through PIP, the initial months after the contract start date will be divided into phases. Appropriate percentage of at-risk margin is then allocated to each phase to balance the risk and reward during transition period.

Performance Management

The management aspect of a PBC must be clarified in a PMF. This is essential so that parties are aware of their respective roles and responsibilities in ensuring the contract is properly administered in a structured manner. Most importantly, at least three decision making committees must be established to review the performance of the contractor. The recommended frequency, purpose and composition of the committees are as follows:

- **Monthly Performance Review:** This review is to be conducted at least once a month. The purpose is to confirm the result of all performance measures, ascertain the resultant APS for the KPIs achieved for the month and determine the total performance payment that should be paid to the contractor. Since PBC is a self regulating contract, disputes on KPI calculations must be resolved based on consensus. The composition of this committee normally involves the buyer's on-site representatives and the contract managers of both parties.
- **Half Yearly Contract Review:** This review is to be conducted once every six months to concur to the decisions of the Monthly Performance Review Committee and to ensure proper contract governance. In addition, this committee is responsible for finalizing the scores of SPMs and SHIs and performance levels attained by the contractor throughout the evaluation period. The composition of this committee includes the buyer's capability sustainment managers and the procurement departments of both parties.
- **Annual Performance Review:** The highest level review committee is to sit once a year to examine the contractor's overall report card which summarizes the result of all performance measures (KPI, SPM and SHI). The committee is to deliberate in greater details the result of the SPMs especially those that touch the behavioral aspects and how the contractor contributed towards the achievement of the buyer's Enterprise Outcome and mission success. The key decision of this committee is the rewards and remedies, mainly in terms of prolonging or shortening the contract tenure. This committee is to be chaired by the head of the buyer's organization.

It is important to note that every sustainment contract is different hence, must be tailored-made based on its' unique requirements. In other words, a PMF for one contract cannot be made a template for another unless a full analysis is done. Today, where open tender is the order of business, the Government must specify PBC requirements upfront as part of the tender process. As such, PMF is the additional document that will be packaged in Government tenders, along with the rest of the specifications.

IMPLEMENTATION

Over the last six years since its first implementation in 2012, more than RM12 million has been saved by the Government through nine capability sustainment PBCs. The saving is actually the payment that should be made to contractors however, was forfeited due to underperformance.

PBC		Stage	% Saving
	Capability Sustainment of:		
1.	Bomba Mi-17 Helicopter	3	6.35
2.	Bomba Agusta A109/AW139 Helicopter	3	5.54
3.	APMM CL-415 Maritime Patrol Aircraft	3	1.48
4.	APMM Dauphin AS356N3 Helicopter	3	0.6
5.	APMM Agusta AW139 Helicopter	3	0.82
6.	KTMB GE Locomotive Class 26	3	10.42
7.	KTMB Rolling Stock Wheel Component	1	0
8.	KTMB Traction Motor Component	1	0
9.	TUDM Air Traffic Control Systems	3	7.15

as of July 2018

Behaviour change is one of the key outcomes expected from 3rd Generation PBC. Based on the implementation of the above contracts, although at first some contractors took the new contracting approach casually, their behaviour changed over time to satisfy the KPIs. The self regulating PBC has also eliminated the “blame” culture amongst the contractors as well as improving the contractors’ attitude towards the buyer. Experience shows that irrespective of the value at-risk of a PBC, contractors having positive attitude have less problem in satisfying the KPIs to receive full payments, compared to contractors with negative attitudes who are normally uncooperative or arrogant. Those who always “hide behind the contract” will not easily adopt the PBC approach and will be difficult to work with.

Of late, in order to instill the commitment of Government contractors, clauses on “investment in capability” and the “use of local sub-contractors” have been further strengthened. This is to intensify industry development by urging contractors to retain work in-country, accelerating the growth of the supporting industry and creating high

skill jobs especially in the technology intensive areas of components MRO. The commitment and the action taken by the contractors will be monitored and measured via SPMs.

The introduction of PBC in Government procurements has also changed the norms in contract negotiations. Usually, the main parameter to be negotiated in Government contracts is the price. With 3rd Generation PBC, there are many other variables that can be negotiated such as “at-risk margin”, KPI weightings, performance levels, PIP transition and others, which make it difficult for the contractor to slant the negotiation to its own advantage. This, in a way, motivates Government negotiators to be more proactive in preparing good negotiation strategies to get the best deal for the Government, prior to negotiating a PBC with the contractors.

Amongst the practitioners of PBC to date, many appreciated the fact that PBC simplifies the payment deduction process as it is done in a very objective manner, hence removing elements of subjectivity which can be grounds of challenge by contractors. Unlike the current conventional contracts where LD deductions are calculated and made at a certain time (eg. at the end of the contract) and involve significant paperwork and specific approval process, the deductions in PBC is made easy on “real-time” basis. The self-regulating PBC has drastically simplified contract management in such a way that deductions are made only based on the contract with no other justification/approval required.

There is also a general perception that PBC will cost more than a conventional contract. This view is invalid since the cost of a contract is directly related to the scope of work and when a contract is converted to PBC, the contract cost will likely still be based on “man and material”. In fact, all seven Stage 3 PBC capability sustainment contracts implemented above did not experience any significant cost increase. If any, the cost increase must not exceed 15% of the original cost.

CONCLUSION

The implementation of the 3rd Generation PBC has been proven to be successful in Malaysia. To date, several capability sustainment contracts for Government moveable assets are running efficiently where contractors are paid solely based on their performance. If a PBC on complex moveable assets can be done, the same can also be accomplished on non-moveable assets such as roads/highways, Government buildings, incineration plants, healthcare facilities and the likes. Facility Management must take advantage of Capability Sustainment experience in employing the latest PBC version to draw the best from its contractors.

Whilst Government procurements through open tender secure the best deal in terms of price, unnecessary leakages/wastages that are often discovered in conventional contracts can still persist and must be dealt with. Without doubt, the 3rd Generation PBC is therefore a viable solution.

Datuk Ir Kamarulzaman is currently a Senior Associate of TDA Berhad, PBC Center of Reference