DELIVERING PUBLIC SECTOR EFFICIENCIES: THE POTENTIAL ROLE OF CAPABILITY MATURITY MODELS IN CONSTRUCTION

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ABSTRACT: This paper is aimed at identifying the potential role of SPICE, especially SPICE level 3, to achieving the proposed UK public sector efficiencies. SPICE level 3 presents the process maturity framework to address the level III of the SPICE model. Building upon the developments of level II, SPICE 3 advocates establishment of a process improvement infrastructure to facilitate good practice sharing in construction organisations. The paper highlights the recommendations of Gershon reviews, in order to achieve the proposed UK public sector efficiencies. The potential benefits of SPICE level 3 is identified and further research in this regard is suggested.

Keywords - SPICE, SPICE 3, Process Improvement, Good Practice Sharing, Capability Maturity Model, Public Sector Efficiencies, Gershon Reviews

1. INTRODUCTION

The development of the SPICE (Structured Process Improvement of Construction Enterprises) model began in 1998 at University of Salford, UK, in response to calls from the industry's critics, such as Egan and Latham who highlighted the need for construction organisations to focus on and improve their processes (Egan, 1998; Latham, 1994). SPICE is on-going an attempt to explore use of Capability Maturity Models in Construction. This paper is aimed at identifying the potential scope of the SPICE model, especially the SPICE level 3 process maturity framework, to contribute to the government's call for achieving public sector efficiencies. Following a brief description of the background to the project, the paper will discuss the relevant aspects of the organisational context within which the proposed process improvement model operates. The components of the SPICE level 3 process improvement model is then be presented. The current focus of achieving public sector efficiencies within UK, with special reference to Gershon reviews is introduced along with its relevance to construction procurement. The paper concludes by highlighting the

potential similarities between the Gershon recommendations and the SPICE level 3 concepts.

2. THE USE OF CAPABILITY MATURITY MODELS IN CONSTRUCTION

Capability Maturity Model® (CMM®) was developed for the United States Department of Defence (DoD). The DoD, which is a major software purchaser, had faced problems of poor quality software, missed schedules, and high costs. In 1991, they approached the Software Engineering Institute (SEI) at Carnegie Mellon University and asked them to produce a model to help assess their software suppliers. The SEI developed the CMM® framework to continuously measure, evolve and improve processes. The CMM® rapidly gained acceptance in the IT sector, and organisations that have successfully implemented CMM® have reported significant benefits. *Reducing delivery time, increasing quality and increasing productivity have always been goals of application development organisations. The evidence indicates that, unlike some competing models and techniques, many organisations achieve demonstrable results from using the capability maturity model as a basis for improvement. Knowing this, more executives now ask if the Capability Maturity Model can help them achieve their business goals. (Henson, 2001, p1)*

SPICE has borrowed many basic concepts from CMM® and developed them into a construction specific model, for step-by-step process improvement. SPICE is intended to address the improvement of management processes within construction organisation with emphasis processes associated with tendering, design and construction. The experience of using CMM® shows that organisation can create a general culture of process improvement by initially emphasising the core processes of product development.

2.1 Process capability and maturity

Over the past decade, a number of management thinkers (Ghoshal and Bartlett, 1994; Quinn Patton, 1998) have begun to stress the unique factors that can provide an organisation with a source of competitive advantage, that distinguish it from competitor organisations and that explain why it does certain things well. They apply terms such as core competence or corporate competence. Instead of competence being viewed solely as the property of an individual, it becomes a social and collective phenomenon embedded in an organisation's processes, systems, relationships and routines. In the view of these thinkers, organisational capabilities are far more decisive in securing competitive advantage than the ability to manage physical assets or produce isolated moments of strategic brilliance. One reason cited is that it is easier for a competitor to

copy a strategic decision than to duplicate a fine tuned highly effective day-to-day business process (Sayles, 1994).

SPICE directly addresses the issue of capability by identifying the current process capability of organisations. Process capability is a forward-looking view of an organisation's operational processes (Paulk et al., 1995; Zahran, 1998). It predicts the outcome of a process before that process has taken place. When a process is stable, its results will have predictable means and be within predictable ranges about the means.

Process maturity is the extent to which an organisation is able to define, manage, measure and control a specific process. Higher process maturity implies that an organisation has potential to improve its capability, and indicates the richness of its processes. Process maturity also suggests that processes will be applied consistently in projects throughout the organisation. The SPICE model helps organisations understand their level of process capability, in terms of their process maturity. In general, mature organisations have a high level of process capability, while immature organisations have a low Level.

2.2 Immature vs Mature Organisations

SPICE differentiates between mature and immature organisations. In an immature organisation, construction processes are generally improvised by employees and project managers during the project. Even if a particular construction process has been specified, it is not rigorously followed or enforced. The immature organisation is forced to react to events, and managers are usually focused on fire fighting. In an immature organisation, there is no method for judging the quality of the product or for solving product or process problems. Quality assurance is often suspended or eliminated when projects fall behind schedule. In an immature organisation, it is difficult to predict the quality of the product. Activities intended to enhance quality, such as project reviews, are often given insufficient attention. Quality assurance checks and documentation are often left until project completion, where defects are identified as snags. At this point, the problems are often more costly to rectify and lead to conflict within the project team. However, even in undisciplined and immature organisations, individual projects sometimes produce excellent results. When such projects succeed, it is generally thanks to the efforts of a highly dedicated team or individual, rather than systematic and proven methods.

A mature construction organisation has an organisation-wide ability to manage design, construction and maintenance activities. The processes are communicated accurately to existing staff and new employees, and activities are carried out according to planned processes. The processes fit each situation well and are consistent with the way the work gets done. Roles and responsibilities are clear throughout the project and across the

organisation. In mature organisations, managers monitor the quality of the product as well as client satisfaction. There is an objective basis for judging product quality and analysing problems with the product and process. The organisational culture includes time for reflection. In general, disciplined processes are consistently followed because all the participants understand the value of doing so, and the infrastructure exists to support the processes. In a mature organisation, construction processes are well understood, usually thanks to practice, enforcement, documentation and training. After implementation, the processes are continually monitored and improved by their users. It is important to note that the actual performance of the project may not reflect the full process capability of the organisation. In some cases, the environment and outside factors can constrain the capability of the project. External constraints which can influence process capability include economic recessions, new supply chain relationships, and acquisitions and mergers. Mature organisations, are considered as capable of adapting to these external factors.

2.3 Stepwise Improvements in Organisational Maturity

The SPICE model promotes continuous process improvement based on many small, evolutionary steps. It divides these evolutionary steps into five maturity Levels, which lay successive foundations for continuous process improvement. These maturity Levels form a scale for measuring the capability of a construction organisation's individual processes, and its overall process capability. Each Level of maturity consists of a set of key processes. When an organisation is successfully applying each key process, it can stabilise an important part of the construction process and make it predictable. The five Levels provide guidelines on how to prioritise efforts at process improvement.

The SPICE model is shown in Figure 1. For each Level, the model specifies a number of "key processes". By following the steps in the model, an organisation can achieve effective and continuous improvement based on evolutionary steps. An organisation can only be at one Level of the model at any one time. If an organisation is at Level 1, but implements some of the key processes of Level 3 or 4, it is still considered a Level 1 organisation. This is because each Level lays successive foundations for the next. The model shows that the organisation has little to gain by addressing issues at a higher Level if all the key processes at the current Level have not been implemented.
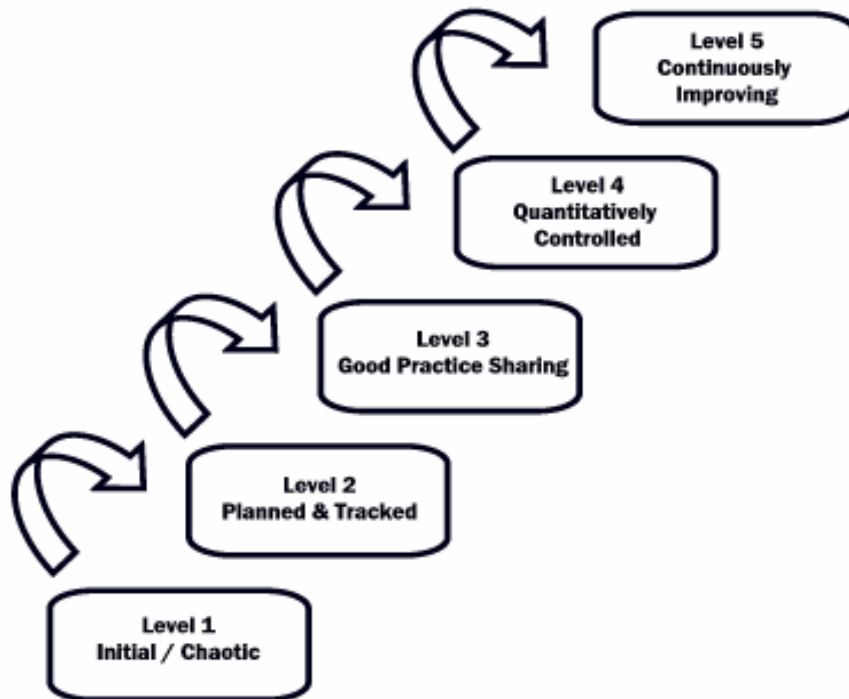
Fig. 1. Five Levels of the SPICE model

Level 1 – Initial/Chaotic

Level 1 is the basic entry Level to the model. At this level an organisation has little focus on process, and project visibility and predictability are poor. Good project practices are local, and are not repeated or "institutionalised" across the company. Ineffective planning and co-ordination undermine good practices. Organisations make commitments that staff or the supply chain cannot meet, which can lead to a series of crises. During a crisis, projects typically abandon planned procedures; instead, individuals do whatever activities it takes to get the job done, with little regard for the effects on other people. In construction, time and cost schedules are often under tight control. Hence the crisis often leads to compromises on quality. At Level 1, the success of a project depends entirely on having an exceptional manager and a competent team. When these managers leave, their stabilising influences leave with them. The construction process capability of a Level 1 organisation is unpredictable, because the process is constantly changed or modified as the work progresses. Performance depends on the capabilities of the individuals, rather than that of the organisation.

Level 2 – Planned and Tracked

At this Level, there is a degree of project predictability. A Level 2 organisation has established policies and procedures for managing the major project-based processes. This allows organisations to repeat the successful practices of earlier projects. Effective process planning is introduced before a project starts. During the project execution, activities are evaluated and improved. An effective process can be described as

one that is practised, documented, enforced, trained, evaluated and able to improve.

At Level 2, organisations make realistic commitments to clients and the supply chain, based on the results obtained from previous projects and on the requirements of the current project. Managers track quality and functionality on site as well as time and costs. Problems in meeting commitments are identified as they arise. The integrity of the project's brief and requirements are maintained throughout the project. Standards are defined and organisations ensure that they are faithfully followed. Organisations work with sub-contractors to establish strong relationships.

At this stage, processes for good project management are planned, tracked and enforced on every project. Each project within the organisation is predictable. However, the management processes across the different projects may differ. Each team devises and enforces their processes.

Level 3 – Good Practice Sharing

A well-defined process includes standard descriptions and models for performing the work, mechanisms to verify that the work has been done correctly (such as peer reviews) and completion criteria, that provide a good insight into progress. In other words, there is organisational visibility of projects. Because the process is well defined, management has good insight into progress. Quality and functionality of all projects are well tracked.

Level 3 is where an organisation develops the capability to capture and share good practices, across the organisation rather than on a localised basis. SPICE model advocates that an organisation does not have the capability to capture and share good practices, until it reaches Level 3. Attempts to do so will be risky and are likely to prove unsuccessful.

The processes for all activities are documented and integrated into the organization. All projects use an approved, tailored version of the organization's standard process. Consequently, organizations develop the capability to capture and share good practices.

Level 4 – Quantitatively Controlled

The process discipline established throughout the organization at Level 3 lays the foundations for objective measurement of the product and processes at Level 4. Consequently, projects are able to reduce variations in process performance, so that they fall within acceptable boundaries. Meaningful variations can be distinguished from random variations. The risks involved in moving up the learning curve - as a result of taking on new categories of projects, or new procurement and supply chain arrangements - can be managed.

The organisation will have a programme that measures productivity and quality for important construction process activities across all projects. This programme forms an objective basis for measuring the product, the process, the degree of customer satisfaction, and the level of harmony across the supply chain.

At this Level, organisations have the capability to set quality goals for (i) the product, (ii) the process, and (iii) the supply chain relationships. Productivity and quality are measured for important construction process activities across all projects as part of an organisational measurement program. This forms an objective basis for measuring the product, the process, and the degree of customer satisfaction.

Level 5 – Continuously Improving

The expectation is that at Level 5, the entire supply chain is focused on continuous process improvement. Level 5 organisations can identify weaknesses and strengthen processes before any problems emerge, and can do so in a collaborative manner. Data on the effectiveness of the processes is used to perform cost benefit analysis of any new technologies and proposed changes in the organisation's processes. This increased level of understanding allows organisations to consider large-scale changes to their processes. Innovations that exploit good practice in business management are identified and adopted throughout the organisation.

Project teams across the supply chain analyse defects to determine their causes. Construction processes are evaluated to prevent known types of defects from recurring, and lessons learned are communicated to other projects.

By Level 5, an organization can use the data on the effectiveness of processes to identify strengths and weaknesses in a pro-active manner. This enables the organization to continuously improve its processes.

2.4 Key Processes

Each SPICE Level, with the exception of Level 1, includes key processes that identify where an organisation must focus to improve processes. SPICE level II key processes are brief and scope of work management, project planning, project tracking and monitoring, subcontract management, project change management, health and safety management, risk management, and project team coordination [(Refer Construct IT (2000) and Sarshar et al (2000) for more details on SPICE Level II key processes]. For an organisation to achieve Level II of maturity, all projects must perform all these key processes adequately. This forms the basis for progression to Level 3.

2.5 Process Enablers

SPICE differentiates between incomplete processes and disciplined processes, listing a number of key management features for a complete and coherent process. Process enablers focus on results that can be expected from a key process. This is a forward-looking approach, which

indicates process capability before a process takes place. They provide critical features that a key process must posses in order to yield successful results. Ensuring that all the process enablers are in place, improves the performance and predictability of key processes. Process enablers are common across all the key processes. SPICE process enablers are explained in more detail in the following section.

3. SPICE LEVEL III PROCESS MATURITY FRAMEWORK

3.1 Process Improvement beyond individual projects : the organisational level

As construction projects often have a limited life span, with a multi-organisational environment to undertake unique and novel products, it is extremely difficult when they attempt to improve processes by leveraging knowledge and lessons learnt from, within, and between projects, to the organisation. In order to successfully deliver a unique, novel, and transient project, it would be beneficial if the project team can make decisions and make adjustments on processes at a local level. However, if too strong an emphasis is placed on defining processes at each project, process improvement at an organisational level would suffer. It could lead to improvising processes each time, thus re-inventing the wheel each time. Process improvement beyond individual projects is thus a logical and necessary step forward to improve organisational performance by capturing good practices and leveraging expertise oall employees.

In order to develop rich and substantial organisational process capability, one should go beyond a boundary of a firm. As the construction industry is highly fragmented, it is essential to integrate the knowledge of various project stakeholders across both upstream and downstream value chains. As these stakeholders have different interests and competencies in processes, it is necessary to prevent opportunistic and adversarial behaviours from impeding collective learning and change. In this context, it is called for more proactive integration efforts among construction supply chain. This may be achieved through strong leadership to create a collaborative climate by forming strategic networks in the construction communities for fostering reciprocal knowledge and good practice sharing.

A SPICE Level 3 organisation builds upon the achievements of Level 2. At this level an organisation has the capability of capturing and sharing good practices on an organisational scale. The aim of SPICE Level 3 is defined as establishing management infrastructure to facilitate process improvement at an organisational scale. At this Level, the organisation has the capability to capture and share good practices and knowledge across projects, at an organisational scale. A Level 3 organisation focuses on creating a process improvement infrastructure for capturing and sharing good practices across the whole organisation (Paulk et al, 1995;

Zahran, 1998). Figure 2 illustrates how Level 3 differs from the previous Levels as to process execution and improvement. Project teams use these good practices and tailor them to define their unique project processes. Employees in any part of the organisation can easily refer to its well-defined set of good practice processes.
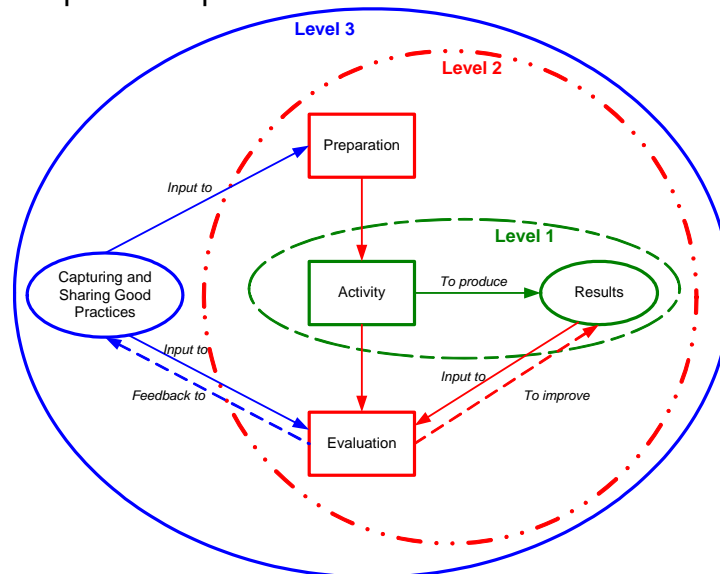

Fig. 2. Transition from Level 1 and Level 2 to Level 3[Source: Modified from Construct IT (2000)]

In order to demonstrate a Level 3 maturity level, organisations need to show organisational process capability that they can integrate and institutionalise learning from individuals and projects, which can be subsequently used at an organisational scale. SPICE Level 3 process maturity assessment can highlight strengths and weaknesses of organisational process capability, and lays a foundation for openly discussing and thereby building consensus on organisation specific strategies to bridge the gap between a current state and a desirable and feasible state.

3.2 SPICE Level 3 key processes

Although establishing an organisational infrastructure for process improvement at an organisational scale entails a diverse array of factors and processes, the SPICE Level 3 team has attempted to untangle complexity involved in organisation-wide process improvement and to present a concise set of key processes that have most direct and important bearings on implementing and achieving Level 3 process maturity. Each key process is defined and explained overleaf.

Process definition

This key process is to establish and develop a well-defined set of organisation-wide good practice processes. Building upon from the achievements and lessons learnt from Level 2, this key process is to ensure that lessons learnt and good practices at a project Level are continuously and periodically captured.

Process customisation

This key process is aimed at achieving the implementation aspect of the common understanding of good practice processes across the organisation. Based on the organisation-wide good practice processes, each team will use them as guidelines (rather than rigid procedures) for developing more project-specific processes considering specific project characteristics (e.g. procurement route, supply chain, location, project team structure, project strategy, and resource requirements).

Process training

This key process is to ensure that the individuals and groups possess appropriate and relevant knowledge and skills required not only to fulfil processes at hand but also to absorb new knowledge necessary to develop further organisational competencies. It entails identifying the current and future gaps of individual, group and organisational competencies and addressing the identified needs successfully.

Process improvement resourcing

This key process refers to providing required organisational resources and time for facilitating process improvement and subsequent organisational change. Detailed requirements and solutions for 'process improvement resourcing' will vary depending on each organisation or team's circumstances and internal climate; however, process improvement initiatives will benefit from senior management sponsorship, which will ensure that resources are directed to critical areas and at an appropriate level.

3.3 SPICE process enablers

SPICE identifies five process enablers that are prerequisite for a process to be complete and coherent. This is a forward-looking approach, which indicates process capability before a process takes place. They suggest that, in order for a process to yield successful results, it must posses such features as detailed in the SPICE process enablers. Thus, all key processes in each Level are tested against these common process enablers.

Commitment

Typically, this means establishing policies that are shared by the whole organisation. Some processes need sponsors or leaders in the organisation. Commitment ensures that leadership positions are created and filled, and that the relevant organisational policy statements exist.

Ability

It normally means having adequate resources (physical and/or virtual) and time, an appropriate organisational structure, and formal/informal training in place. It is also necessary to have appropriate mechanisms to enlist collaboration and involvement of employees.

Activity

They typically involve establishing plans and procedures, performing the work, tracking it, and taking corrective action as necessary.

Evaluation

During the early stages of maturity, this will mean efforts by the team to improve existing processes. The focus here is on the project team's internal improvements.

Verification

Adopting such verification checks as a process enabler emphasises the need for independent quality assurance. The focus is on external verification of processes. This enabler can be usefully utilised as a learning point that it helps organisations identify possible root causes of their success/failure and devise feasible solutions.
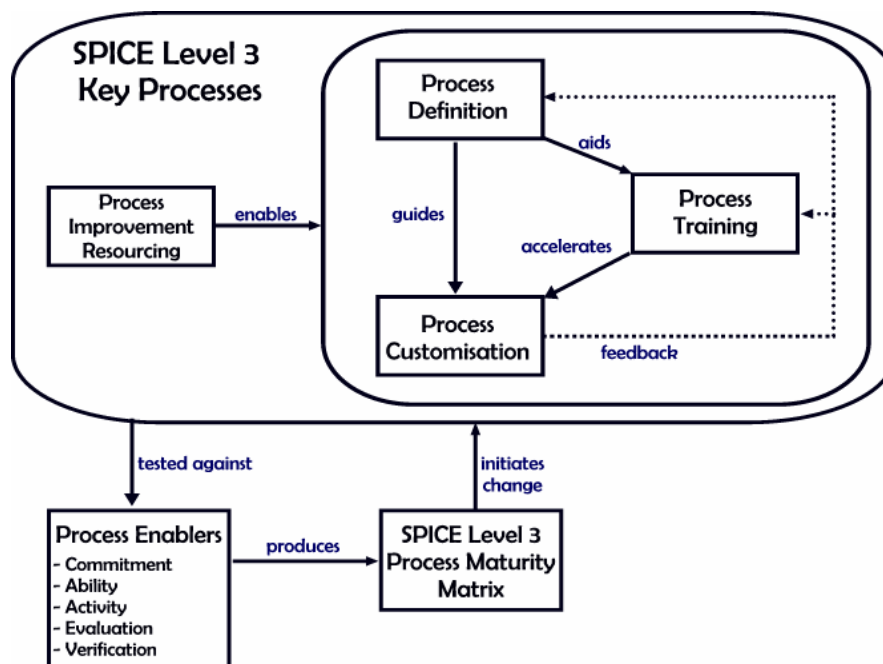

Fig. 3. A schematic diagram illustrating how Level 3 Key Processes are linked to each other and how they are positioned within SPICE Level 3

Figure 3 shows a schematic diagram to illustrate how these Level 3 key processes are linked to each other and to process enablers within the SPICE Level 3 assessment scheme. The SPICE model argues that, at Level 3, key processes should be integrated and interact with each other. For example, establishing and developing organisation-wide good practice processes ('Process Definition') will aid the organisation to prioritise issues pertinent to employee learning and development ('Process Training'). The

established and developed organisational good practice processes will help the organisation have common understanding of the processes and their contexts so that they can tailor those good practice processes to meet the specific needs of individual construction project ('Process Customisation'). The tailoring process will be also accelerated along with the increased competency and skill levels of employees through process training. The activities within these three key processes will be sustained and enabled when there are appropriate organisational resources and supports to foster process improvement and organisational change ('Process Improvement Resourcing').

In order to satisfy the process maturity level advocated by SPICE Level 3, the key processes need to be backed up by the process enablers that are key features of disciplined processes: commitment, ability, activity, evaluation, and verification. Once the SPICE Level 3 key processes are tested against these five process enablers, the SPICE Level 3 process maturity matrix can be produced to help organisations identify gaps and initiate organisational change. The process maturity matrix shows graphically the strengths of the organisation in terms of process capability and which areas need to be further improved. A sample process maturity matrix is shown in Figure 4.
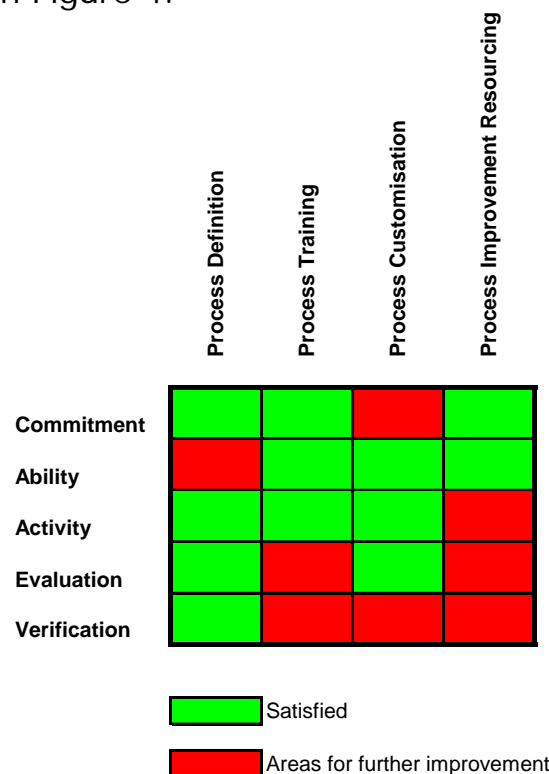

Fig. 4. A sample SPICE Level 3 process maturity matrix

3.4 Case studies

In order to ensure SPICE Level 3 key processes are relevant and applicable to construction organisations, the research team undertook field works in real world settings. The research was conducted in close

collaboration with several construction industry partners, which included two main case studies.

One of the case study organisations is a major UK infrastructure provider working predominantly for the Highways Agency and Local Authorities. The second case study was conducted with one of UK's largest global airport operators, which manages all commercial facilities at its airports including shops, catering outlets, foreign currency exchange, car hire and car parks. In each case, the organisation was assessed against Level 3 of the SPICE framework. The case studies helped to validate and also further refine the SPICE Level 3 framework, and also provided useful feedback to the participating organisations. [For more information on the case study results please refer Jeong et al, (2004), and Siriwardena et al, (2005)].

4.   CURRENT FOCUS ON UK PUBLIC SECTOR EFFICIENCIES

The "Modernising Procurement" report published in 1999, highlights the importance of procurement as a key criteria for the management of public sector operations.   *It is vital to get the necessary goods and services at the right quality, at the right price and at the right time (Comptroller and Auditor General,1999, p2).* It also states that improving the efficiency and cost effectiveness of government procurement is an important part of the Modernising Government agenda.   In 1998, the government commissioned two separate but complementary reviews on the subject of government procurement (OGC, 1999). The first of these reviews was undertaken by Sir Peter Gershon, to review civil procurement in central government in the light of the government's objectives on efficiency, modernisation and competitiveness in the short and medium term. The second was by Sir Malcolm Bates, which examined the progress made by the government in the delivery of PFI and PPPs. Both reviews propose significant organisational change (OGC, 1999). The report by the Comptroller and Auditor General titled "Modernising Procurement" which was published in 1999 also indicated the government's intention to achieve public sector efficiencies, especially within its procurement function.   Sir Peter Gershon's independent review of public sector efficiency titled "Releasing resources to the frontline", published by the Treasury in July 2004 is one of the latest publications of in this regard.

4.1 The Gershon Reviews and their relevance to Construction Procurement

The Gershon Review of 1999 examined the whole process of acquisition from third parties by Government, including goods, services and large capital projects. (OGC, 1999). Having recognised that the term 'procurement' has many different interpretations, Gershon (1999)

considers 'procurement' as the whole process of acquisition from third parties (including the logistical aspects) and covers goods, services and construction projects. This process spans the whole life cycle from initial concept and definition of business needs through to the end of the useful life of an asset or end of a services contract. Both conventionally funded and more innovative types (e.g. PFI/PPP) of funded projects are included. In an attempt to highlight the importance of including built environment assets within this context, Gershon quotes *"The process is not limited to the purchasing function in departments and is inherently multi-functional especially in large, complex and / or novel procurements (Gershon, 1999, p1)"*. He also positions construction as a major component of public procurement. *"..the public sector is one of the biggest purchases of goods and services in the economy. In 2003-04, the public sector spent over £100 billion purchasing for example utilities, ICT systems and services, as well as professional services, temporary labour, construction, social housing, social care, and environmental services;"* (Gershon, 2004, p 9).

In order to determine the efficiency and effectiveness of the current procurement arrangements, Gershon (1999) considered seven (7) aspects, namely Policy, Organisation and Structure, Process, Measurement, People, Supply Base and Implementation. For the purpose of this paper, we pay special attention to five (5) of them.

Policy

Gershon (1999) identifies a number of weaknesses in Government procurement. These cover organisation, process, people and skills, measurement and the contribution of the "centre" of Government. The proposals for dealing with these weaknesses called for the creation of a central procurement organisation called the Office of Government Commerce (OGC). The aim is to provide a greater sense of direction in procurement and push best practice in the public sector. Gershon (1999) recommended that OGC should establish a common strategic framework within which all departments should conduct their procurement activity. The framework would cover a standard procurement process, common performance measures, key standards, common systems and key values.

Organisation and Structure

The Review found widespread recognition that there is a need for a central body to ensure consistency of strategy, promotion of best practice and appropriate aggregation. Fragmentation and insufficient coordination between those central organisations with a significant role in procurement mean that, at present, the centre lacks the means to drive through changes in Government procurement. (OGC, 1999). *There is no single person or body accountable for the deployment of resources involved in central procurement activities and I consider that these resources are being utilised in a sub-optimal manner in terms of ensuring the best overall procurement performance by Government. This fragmentation and*

lack of co-ordination results in the Centre having an unnecessarily limited 'value add' and not being able to act as a strong catalyst in improving overall Government procurement. A single 'one-stop shop' procurement central organisation should be created by combining as many of the resources of the above central activities as is possible (Gershon, 1999, p5-6).

Process

Another weakness identified in Gershon (1999) is the absence of a common process across Government for the management of large, complex or novel projects. *There is no well defined, common 'cradle to grave' process for managing procurements which are large, complex, novel, or some combination of these criteria. This puts important acquisitions of goods, services, or construction projects - funded either conventionally or by other means such as PFI - within, or across, Departments at unnecessary risk as there is no common mechanism for strategically controlling such procurements throughout their life cycle. (Gershon, 1999, p7).*

Gershon (1999) recommended that OGC should define a common process taking into account best practice in the private sector and relevant experience from Government.

A well defined, common process for the strategic management of large, complex or novel (or some combination of these criteria) procurements should be implemented based on the following principles:

- *projects have distinct phases in their life-cycle*
- *the 'gates' between these phases can be characterised by sets of deliverables (e.g. requirements specification, procurement plan, project management plan, risk management plan)*
- *deliverables should be assessed by people with relevant expertise who are independent of the project*
- *important 'gates' (typically 3 in the life cycle) can only be passed as a result of successful reviews chaired by senior people who have no vested interest in the outcome of the review. (Gershon, 1999, p8).*

He also suggested that the detailed definition of this process, including the required deliverables at each gate, should be led by the OGC who will take into account external best practice and the experience gained from both recent successes and failures in Government procurement of large, complex, or novel projects.

Highlighting the potential benefits of the above approach, Gershon states *"such a process will:*

- *help to ensure a more consistent and enhanced level of performance on project orientated procurements, thereby saving money and boosting efficiency*
- *catalyse widespread use of best practice, as this will increasingly be documented in the definition of the deliverables*

- *provide a foundation for procurements which support joined-up Government initiatives"* (Gershon, 1999, p8).

Gershon (1999) also points out the importance of incorporating the supply chain management within the overall process framework. *The OGC should develop a common process for the management of the supplier base, with top priority being given to those suppliers who are involved in the provision of goods and services which are critical to the successful operation of Government. Such a process must be firmly based on measurable data. It should also define the role of the OGC in the management of the overall relationship with suppliers and the role of Departments in managing individual project based relationships with suppliers. (Gershon, 1999, p8).*

Measurement

Good common measurement systems are an essential component of any effective procurement system (OGC, 1999). Gershon (1999) considers good common measurement systems as essential component of any procurement system which aspires to be best in class. The Review identified that there are no cross-Government systems for recording what is purchased, the associated prices and sources of supply; analysing the true costs of procurement transactions; rating the capability and performance of suppliers; or targeting and measuring year on year value for money improvements. Gershon considers this is an area of great concern. *The complete absence of any such systems is the finding that gave me the greatest concern during the course of this Review. The absence of a common system for rating the capability and performance of suppliers results both in unnecessary duplication of effort in Government and the supply base, and contributes to the overall sub-optimal management of suppliers. (Gershon, 1999, p10).* The weakness in measurement means that Government lacks an essential tool for strategic procurement activities and inhibits informed decision making. (OGC, 1999). Gershon recommended that the OGC should work with Departments to produce a common system for rating the capability and performance of suppliers. *Wherever possible capability measurement should be based on recognised external benchmarks (e.g the Business Excellence Model). Performance ratings should be based on objective measurement of recent track record on Government contracts where these exist. (Gershon, 1999, p11).*

People

Gershon (1999) also recognised the importance of redefining the knowledge skill requirements within the public sector in order o achieve the proposed effceices. *Although there are some very talented and capable people within the Government Procurement Service that is now being established, I concluded that the overall levels of skill, capability and seniority need to be raised significantly. (Gershon, 1999, p12).* He recommended that a strong planning function to be implemented within

the OGC so that procurement skills required to support new Government policies and initiatives.

Several sources have indicated that the Gershon reviews and recommendations have specific relevance to the local government institutions too. Achieving greater efficiencies across the whole of the pubic sector is essential to support the Government's continuous drive for improved public service delivery. Local government has a key role to play in this ambitious agenda. Sylvester J., (2004). *Future for Local Government: Developing a 10 – Year Vision* (ODPM, 2004) identifies "service delivery and the performance framework" as one of the four main areas of attention in achieving the above vision (Leach and Pratchett, 2005). In this regard, finding ways of continuously improving organisations is seen as a challenge (Leach and Pratchett, 2005). They also consider Sir Peter Gershon's latest public sector efficiency review as a key external influence to the local government agenda. *Sir Peter Gershon's independent review of public sector efficiency, published by the Treasury in July 2004 in advance of its three year spending review, has of all external influences, potentially the most significant impact on local government* (Leach and Pratchett, *2005, p327).*

5. CONCLUSION

Public sector forms a major component of the construction industry. Construction organisations are increasingly challenged to improve performance. This has been further highlighted by the public sector efficiency reviews and such as Gerhon (1999), and Gershon (2004) as discussed in the previous section. SPICE research, especially the development of SPICE level 3, we recognised process improvement at an organisational level as a multi-faceted problem, involving a range of stakeholders. Taking into account many organisational process management aspects, we identified four key processes at Level 3 that have important bearings on efforts to establish and develop an organisational management infrastructure for process improvement. The four key processes are: process definition, process training, process customisation, and process improvement resourcing. In addition, in order to achieve SPICE level 3 maturity level, we argued that these four key processes need to satisfy five process enablers: commitment, ability, activity, evaluation, and verification.

Having considered the above mentioned public sector efficiency focus, we contend that the use of Capability Maturity Models in Construction, especially SPICE, can contribute towards achieving procurement improvements. Gershon strongly supports the use of common best practice processes (The Consultation Institute, 2004). *Observing best practice principles will involve developing standards, training staff and better coordination. (The Consultation Institute, 2004, p5).* This issue is at the heart of SPICE level 3, since its main aim is to develop

organisational wide good practice sharing framework. SPICE level 3 key process "Process Definition" recommends a similar approach. Gershon (2004) states that efficiency in the public sector involves making the best use of the resources available for the provision of public services. It is common knowledge that the public sector procurement, especially with regard to built environment assets and services consist of a wide scope and variety. Hence the common best practices identified at a broader regulatory level, requires being tailored to suit and also to make best use of the local conditions. In this regard SPICE level 3 key process "Process Customisation" advocates a related concept. Gershon's call for improving the skill and knowledge of frontline professionals to seek improvement efficiencies and engage in novel procurement approaches can draw similarities with the SPICE level 3 key process "Process Training". The overall organisational commitment to engage in the quest to seek efficiencies bears comparisons with the principles advocated within "Process Improvement Resourcing". Together with the SPICE process enablers, we believe that, the SPICE framework, especially SPICE 3 has the potential to act as both an assessment and improvement tool, within the broader objective of reshaping the public sector built environment stakeholders to achieve greater efficiencies. As such further exploration in this regard is seen as a worthwhile exercise.

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