Process Improvement in the Facilities Sector: A Case Study

M. Sarshar(1), M. Amaratunga(1), D. Baldry(1), R. Haigh(1), M. Nelson(1)
1- School of Construction & Property Management- University of Salford, The Crescent, Salford M5 4WT, UK; Tel - ++ 44 161 295 5317 ; Email M.Sarshar@Salford.ac.uk

Introduction
Facilities Management (FM) is a new field, which has strong correlation to the construction and property disciplines. FM is responsible for co-ordinating planning processes and managing a building’s continuous development and changing use patterns as well as for maintenance and operability. Although FM has achieved a certain level of maturity as a discipline during the last decade, it is still in its infancy in FM process research with very little research carried out so far. Nutt (1999) states that, “FM continues to be reliant, to a large extent, on borrowed management concepts and the technical results of building performance research…. FM is invisible in the agenda of the national research councils...A coherent FM disciplinary base must be put in place to provide internal coherence to the business community and property profession”.

The growing commercial market in FM, as well as new procurement routes such as PFIs (Private Finance Initiative) have placed FM and whole life cycle research firmly on the UK's agenda. To date the facilities sector has not benefited from process thinking. Process mapping and improvement initiatives are fairly new to the sector.

SPICE FM is a current research project at Salford University, which aims to develop a process improvement framework for FM. The research builds on an existing SPICE (Structured Process Improvement for Construction Enterprises) framework for the construction sector. One problem with the SPICE framework is its lack of alignment with business strategy. SPICE FM aims to overcome this, by linking SPICE with the Balanced Score Card (BSC) approach (Kaplan 1996).

This paper introduces the underlying concepts of SPICE and the BSC. It then describes the case study of applying SPICE and BSC to the FM division of a hospital, and discusses how the two concepts were brought together in this case study.

The SPICE Model
SPICE (Sarshar 2000a) is a process improvement framework for the construction industry which is based on an existing successful model, the Capability Maturity Model (CMM), which was developed by the US Department of Defence and is widely used in the software industry, (Paulk, 1993; Saidian, 1995; Sarshar et al, 1999a,1999b). Successful implementers of CMM have reported significant business benefits.

Increasing evidence from other sectors (Imai 1986, Paulk 1993,1995) shows that continuous process improvement is based on many small, evolutionary steps, rather than revolutionary measures. The SPICE framework organises these evolutionary steps into five maturity levels that lay successive foundations for continuous process
improvement. These maturity levels define a scale for measuring the maturity of a construction organisation's processes, and evaluating its process capability. They provide guidelines for prioritising process improvement efforts. The SPICE maturity framework is depicted in figure 1 (Sarshar 2000).

This model is effectively a process roadmap. It offers the following features:

- It “paints a picture” of what a “perfect and effective” process environment looks like.
- It identifies the attributes of each level of process improvement.
- It provides step-by-step guidelines for striving towards this “perfect picture”. These guidelines are not prescriptive. They highlight what needs to be achieved, without prescribing how to do them.
- It identifies the challenges faced at each level.

The SPICE model has been successfully tested on large construction projects. SPICE FM is trying to tailor the model the FM phase. This will create a whole lifecycle process improvement team.

One weakness of CMM and SPICE is that they are not linked to business strategy. SPICE FM seeks to create this link by integrating SPICE with BSC.
**Balanced Score Card (BSC)**

An increasingly popular board room technique for measuring performance criteria that are not immediately linked to bottom-line profits, but will have an impact on future profits, is the so-called Balanced Scorecard (figure 2). Morris (1999) explains, “in business, it’s important to have a balanced approach. You shouldn’t just measure financial targets or performance targets to find out how well you are doing. The balanced scorecard encouraged managers towards “a fast but comprehensive view of the business” (Kaplan and Norton, 1992) – likened to dials in an aeroplane cockpit – in terms of financial, customer, internal business and innovation and learning perspectives. “The Balanced Scorecard integrates traditional financial measures with operational and softer customer and staff issues, which are vital to growth and long-term competitiveness” comments Newing (1995). In addition, while traditional financial measures report on what happened during the last period, without indicating how managers can improve performance in the next, the scorecard functions as the cornerstone of the organisation’s current and future success (Kaplan et al, 1993).

The balanced scorecard measures are built around the following four perspectives:

- **Customer** - what do existing and new customers value from us?
- **Internal processes** - what processes must we excel at to achieve our financial and customer perspective?
- **Learning and growth** - can we continue to improve and create future value?
- **Financial** - how do we create value for our shareholders?

The four perspectives of the scorecard permit a balance between short-term and long-term objectives, between desired outcomes and the performance drivers of those outcomes, and between the objective measures and softer, more subjective measures. While the multiplicity of measures on a Balanced Scorecard seems confusing to some people, properly constructed scorecards contain a unity of purpose since all the measures are directed towards achieving an integrated strategy.

![Figure 2 – Different Segments of the Balanced Scorecard](image-url)
**Linking measurement to strategy**
The primary focus of the balanced scorecard is on translating the organisation's strategy into measurable goals (Letza, 1996). Having understood what is important for the business, performance measures are set up to monitor performance and targets must be set for improvement. These must then be clearly communicated to all levels of management and staff within the business. This enables them to understand how their own efforts can impact on the targets set in respect of each perspective.

**THE RESEARCH**

**Research Methodology**
The SPICE FM research team has worked in close collaboration with industrial partners. Brandon (1999) acknowledges that there are large gaps between the industrial perspective and requirements, as opposed to the academic perspective. SPICE FM has been reasonably successful in bridging some of these gaps. A steering committee of practitioners and academics lead the research and findings are verified by continuous dissemination and exchange of ideas with industry representatives. The research is presented to a bi-annual ‘panel of experts’ committee where between twenty to thirty senior academics and industrialists provide discussion, feedback and future direction.

The SPICE FM framework is ‘tested out’ via case studies together with exploring the applicability of the BSC concept in FM. A study was made of the various research methodologies in order to select a suitable approach and the nature of the how and why questions to be posed during the research. The involvement of both qualitative and quantitative data pointed to the use of the case study methodology. According to Yin (1994) this approach is ideally suited for areas where knowledge building is in its formative stages with few prior studies to build on.

The SPICE FM questionnaire, analysis of archival records, and documentation are the research tools to collect quantitative data. This approach is particularly suited and valuable in building up relationships among concepts to be analysed in testing the model. Level One is the entry level to SPICE with no key processes and organisations at this level have little process focus. Therefore, Level One organisations must focus on implementing Level Two key processes. Hence the process capability of a FM organisation is assessed against the key processes of levels two and above during the initial studies. The analysis of case study evidence will be carried out comparing empirical evidences against theoretical propositions.

**Case Study**
The first case study was conducted in the facilities sector of a hospital.

**SPICE-** The practitioners participated in a mini-assessment process based on Sarshar (2000a). The research team presented the senior management and the team with results of their process capability, their strengths and their weaknesses. Some suggestions for improvement were also captured during the assessment. The assessment results were generally meaningful to the senior management and the team. Senior management took some corrective action following the assessment results and
the improvement suggestions. A major weakness of the SPICE FM model was that terminology had to be improved. Sarshar (2000c) gives a more detailed explanation of this case study.

**BSC**- In parallel to the SPICE case study, a BSC was developed with the senior management. The first version of the BSC was seen to be too comprehensive. The research decided that a long and comprehensive BSC dilutes the organisational focus and sense of priorities. The research team and the senior managers reduced this initial BSC to a more limited BSC, addressing only the most critical issues. This BSC served as a basis for prioritising improvement suggestions.

Figure 3 shows how SPICE and BSC were integrated. This figure is explained below:

1. **Process Analysis**- The SPICE assessment led to a benchmark (base line) of current process capability.
2. **SPICE Improvement**- This current capability served as a basis for generating improvement suggestions.
3. **Knowledge System**- Approaches 1 and 2 populated a knowledge bank for the organization, informing it of its current position and future requirements, in terms of its operational process capability.
4. **BSC Approach**- The BSC dictated the strategic directions of the enterprise.
5. **Specific Process Improvements**- Comparing boxes 3 and 4 led to identifying process improvement priorities.

![Figure 3- Linking SPICE with BSC.](image)

**Discussion**

SPICE FM aims to create a step-wise process improvement framework, which is linked to strategy. A major problem with strategic thinking in organizations is that many organizations do not have the capability and infrastructure to implement strategy. SPICE FM strives to bridge this implementation gap.

The integration of the BSC and SPICE FM appears successful in the early public sector (hospital) case studies. However, feedback from industrialists indicates that operations in the private sector are significantly different to the public sector. Future case studies are planned to experiment the applicability of SPICE FM to the private sector.
REFERENCES
Sarshar (2000b), Introduction to SPICE, Construct IT for Business, The University of Salford.