Heathrow Terminal 5: a fresh approach to the Balanced Scorecard

Heathrow Terminal 5 opened on 27 March 2008 with high expectations. It represents a major step in the transformation of Heathrow and it is now a major gateway to the UK.

From the start T5 was different and it needed to be due to its size, complexity and proximity. Despite some teething problems on opening, T5 was a catalyst for new and improved ways of working. One such initiative is the application of a Balanced Scorecard approach in managing quality in major projects.

The T5 project

BAA's Terminal 5 Programme at London Heathrow Airport was one of Europe's largest construction projects. Terminal 5 caters for approximately 30 million passengers a year and provides additional terminal and aircraft packing capacity. There are 42 aircraft stands (in phase one) including stands to cater for the Airbus A380. T5 features a world-class transport interchange connecting road, rail and air transport. The Heathrow Express from London Paddington and the Piccadilly Line have been extended and a new spur road links T5 to the M25 motorway. Passengers move from the terminal to satellite buildings by a driver-less tracked transit system. The new 87-metre control tower will meet the longer term demands of air traffic control at Heathrow. The facility opened to the public on 27 March 2008 and represents a £4.3 billion investment to BAA.

The project was delivered by BAA working in partnership with suppliers and the airline operator British Airways. By 2008 around 50,000 people, employees and key stakeholders, had been involved with building T5, working both on and off site. Only about 120 employees were directly employed by BAA. The project has deployed circa 100 first-tier contractors and consultancy firms, of which only three contractors (Laing O'Rourke, AMEC and MACE) were designated as principal contractors.

The mission and key objectives of the project were:

- set new standards in delighting the traveller at T5;
- develop and deliver T5 to new industry standards of health safety and security;
- earn the proactive support and trust of key stakeholders;
- achieve exceptional performance to ensure value for money, on time delivery and an efficient and productive T5; and
- leave behind a legacy of quality.

The need of supplier partnerships in line with the T5 Agreement and the complexity of rail, road, construction and systems requirements of the project were additional drivers.

To achieve these audacious targets in money and programme BAA had to consider a novel contracting and procurement strategy supported by a performance management system. Suppliers signing up to BAA agreements were expected to work in integrated teams and display true partnering behaviours and values akin to partnering.
Before embarking on the Terminal 5 (T5) programme of works, BAA looked at a number of major UK construction projects to ascertain lessons learned, particularly where they had gone wrong. BAA decided that they had to have an agreement that could deal with an adaptable and dynamic approach dealing with the uncertainties and embracing integrated teams. So BAA wrote its own bespoke agreement or contract. The same conditions of contract applied to all key suppliers irrespective of type or usual position as a subcontract. And to support the governance of the project in line with this agreement a Balanced Scorecard based performance management system was developed for the T5 project.

The Balanced Scorecard

A Balanced Scorecard is a strategic measurement system organized in four perspectives:

- financial;
- customer;
- internal processes; and
- learning and growth.

It aims to establish tangible performance indicators in all functions of the business.

One of the proven virtues of this system is that it proposes a balance between concepts that could be contradictory to managers. For example, it aims to balance between short-term and longer-term objectives, financial measures versus operational measures, internal performance versus external performance, enabling indicators versus results indicators and between leading and lagging indicators.

The same benefits an organization as a whole can derive from the deployment of a Balanced Scorecard based performance measurement system can also be acquired by a project's management. Performance measures enable project managers to track whether the projects they are managing are moving in the right direction. Furthermore, projects do not only provide financial benefits: many of the outcomes of a project are intangible in nature.

The comprehensive approach of a well-designed performance management system is underpinned by three fundamental criteria leading to the success of a performance management system including the Balanced Scorecard. These are:

1. rigour in purpose;
2. rigour in measurement; and
3. rigour in application.

A customized application of a performance management system based on the concept of the Balanced Scorecard in Heathrow Terminal 5 Project has created a fresh approach to involve all key stakeholders, including major consultants and contractors, to move towards a project quality culture.

T5 performance management system

Key performance indicators and measures

The performance management system of T5 is underpinned by well thought out key performance indicators and measures.

The KPIs are selected as high-level quality indicators to steer the major project objectives and requirements, ensuring that stakeholders are identified, requirements and benchmarks agreed, inspections and tests are planned to get them right first time and work is complete.

The KPIs, supported by linked key measures, provide overall snap shots to direct the project through enablers, monitoring progress or assuring results. The performance data
are the metrics that are measured for each part of the project by team members, including suppliers, to monitor performance as a target or planned versus actual.

Guidance notes

It is important to recognize that all metrics must be tried and tested with worked out examples and also validated by collecting trial data under different conditions before communicating to the project team. It was helpful to provide a guidance note for each metric which are then explained to team members in workshops to gain their understanding and acceptance. A similar process was followed for T5 performance metrics and a Quality KPI Workbook was prepared. The workbook contained a description and definition of each indicator and measure supported by guidance notes and individual or team responsibilities.

In order to clearly assign responsibility and accountability for each KPI a simple RACI (responsible, accountable, consult and inform) format was used. Each team member or leader either as an individual or as a team was aware of the role as a sponsor (responsible), owner (accountable), contributor (consult) or participant (inform).

Performance monitoring and improvement

Embedding performance management in the T5 project

The roll out and implementation of the Balanced Scorecard based performance management for the T5 Project were enabled and enhanced by two major initiatives of the project:

1. the T5 Agreement; and
2. a four-tiered approach of quality culture.

The T5 Agreement was agreed between BAA and the major consultants and first tier contractors. Under the terms of this T5 Agreement, BAA took a single insurance policy to cover the multi-billion pound project. And because BAA had shouldered the risk, it expected the consultants and suppliers to work together. People from all stakeholders were encouraged to raise issues at the earliest opportunity. This helped the reporting and discussions on performance and non-conformance issues.

An inter-related four-tier approach of embedding quality culture to project team members and suppliers was introduced in 2005:

1. Stakeholders’ engagement for commitment.
2. Create a culture that values quality.
3. Integrated communications campaign.

This approach is an ongoing process and is primarily driven by focused discussion groups and workshops.

The stakeholder engagement and commitment process is supported by the project executive's commitment to engage with project leadership and suppliers (principals) to introduce a right first time quality concept and get their buy-in and commitment.

The culture and behaviour change process has been iterative, comprising regular workshops, briefings, awareness and feedback on quality KPIs and right first time behavioural change programmes. This is further supported by the third-tier communication campaign, which includes quality logo branding, quality commitment workshops, quality booklets, quality walkabout, quality awards and posters.

The fourth tier on quality best practice started with research and interviews with experts to establish best practices and align them with quality KPIs. This was followed by supervisor training and workshops to ensure understanding and ownership from supervisors.
Monitoring and Improvement

Each project team (such as airfield, baggage, rail, TTS, etc.) record, measure and monitor each performance measure, and on a monthly basis the key performance measures are reported as a Balanced Scorecard.

The key performance measures provide a snapshot of the performance of each project team, which are also highlighted by RAG (red, amber, green) colour codes according to their status with regard to targets. However improvement projects are acted upon more by individual performance measures at the specific project level. The most significant contributors to improvement projects are non-conformance reports (NCRs).

Overall, circa 6,000 non-conformance reports were raised on T5 and the cumulative cost of non-conformance was only 0.6 per cent of the budget. Analysis of the data showed that 70 per cent of the total cost of non-conformance resulted from just 150 reports. A no-blame culture resulted in speedy and effective resolution of all issues.

Learning points

The best practices of project performance management arising from this case study include:

- encouraging supplier partnership and proactive involvement of contractors in monitoring and improving project quality and conformance to standards;
- providing indicators and measures in three main themes as enablers, monitoring progress and showing results along the project life cycle right up to the handover and completion of work;
- the metrics and processes are validated and then embedded by extensive discussions with stakeholders followed by documentation, communication campaign and training workshops; and
- the ongoing reporting of non-conformance reports (NCRs) supported by the estimation of cost of non-conformance and improvement projects based on root cause analysis is a strong point of the process and opens the opportunities for Six Sigma and innovation.

The application of the T5 Balanced Scorecard over a few years has also focused on areas of further refinement. These include:

- incorporate Six Sigma training and methodology in the project quality strategy and link them with NCR-related measures;
- explore and then extend a Balanced Scorecard approach and metrics to the design phase (including conceptual and preliminary engineering) of a major project (this is now in place for BAA major capital projects); and
- align the key performance indicators and measures to a formal self-assessment of EFQM (European Foundation of Quality Management) type excellence process.

This case study is an important first step in providing support towards measuring and improving quality standards in major projects. The performance management system of the T5 project, having learned from other major projects, has established a "best practice" of the application of a Balanced Scorecard approach in major projects by involving major stakeholders and contractors.

January 2010.

This is a shortened version of "Case study: A fresh approach of the Balanced Scorecard in the Heathrow Terminal 5 project", which originally appeared in Measuring Business Excellence, Volume 13 Number 4, 2009.

The authors are Ron Basu, Chris Little and Chris Millard.