

# *Promoting innovation and exceptional performance in the Scottish construction industry*

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# PROMOTING INNOVATION AND EXCEPTIONAL PERFORMANCE IN THE SCOTTISH CONSTRUCTION INDUSTRY

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## **Abstract**

*Demonstration Projects are an initiative developed in response to demands presented in the 1998 Egan Report. Scotland has witnessed an attempt to keep the momentum and the so called Demonstration Projects Team at the University of Dundee was introduced in late 2003. The team's responsibility was to revitalise and restructure Scottish Demonstration Projects. These are now a major initiative within the newly established Scottish Construction Innovation and Excellence Centre, a part of Scottish Construction Forum that is an umbrella organisation funded by the Scottish Executive through Scottish Enterprise Glasgow.*

**Keywords:** *Demonstration projects, Innovation, Exceptional performance, Scotland, Construction industry*

## 1 Introduction and Background

The Movement for Innovation, M4I, was established in 1997 in response to Sir John Egan's call for improvements in the construction industry (Egan, 1998). One strand of the Movement for Innovation was the promotion of Demonstration Projects (DP) to demonstrate and share innovative practice. Twelve clusters were set up: nine in England, and one each in Northern Ireland, Wales and Scotland. The, at the time, Department for Environment, Transport and the regions (DETR) funded all twelve clusters and data was compiled centrally in London. The Building Research Establishment for Scotland (BRE Scotland) have provided support in establishing and maintaining this cluster under the DTI Construction Directorate funded BRE Framework project. Since 1998, BRE Scotland's remit has been to acquire and manage the Demonstration Projects in Scotland, act as the focus and point of contact for the M4I in Scotland, and organise and run quarterly cluster meetings. In England, Constructing Excellence (CE) has become the umbrella organisation and the new brand name for Rethinking Construction and the Construction Best Practice Programme. As a result of changes in the funding mechanism, DETR funding for Demonstration Projects in Scotland expired at the end of the 2001/2002 financial year.

In October 2003, as an interim measure, the Construction Management Research Unit (CMRU) at the University of Dundee was invited to provide cluster coordinators to administer and promote the Demonstration Projects in Scotland. In parallel with the re-branding of Rethinking Construction, Scotland was undertaking its own review of how to improve the performance of the construction industry. This resulted in the acceptance by the Scottish Executive of the recommendations contained in the Report "Achieving Construction Innovation and Excellence in Scotland" (Modernising Construction Strategic Group, 2003). As a result, two Scottish bodies, a Forum and a Construction Innovation and Excellence Centre have been established. Initial funding was provided by Communities Scotland for a period of six months until the Scottish Forum and Centre were sufficiently well established to take over responsibility or at least to conclude any pending projects to finalise the initiative. However we were on a quest to revitalise and improve the programme. The purpose of this paper is thus to introduce the programme, its initial drawbacks and current developments in order to show that promoting innovation in construction is not just an empty phrase.

## 2 Old Procedures

Initially the administration of Demonstration Projects involved a three stage process (Dauber *et al.*, 2004a):

- submission of applications (*i.e.* Nomination Form and first part of the Innovation Review Form (IRF))
- assessment of the application by a peer review group (*i.e.* assessed initial Cluster meeting presentation using first four criteria of a Peer Assessment Form and assessed final Cluster meeting presentation using all ten criteria of a Peer Assessment Form)
- dissemination of results (*i.e.* case histories, Constructing Excellence website)

The criteria for acceptance of a Demonstration Project varied from cluster to cluster. In some cases, innovation was defined as any process or procedure which was new to the company concerned.

## 2.1 Submission of Applications

Applications were either received from project teams or recruited by visiting mainly large and medium size contractors. They were first briefed on the application process, suitability and documentation. The team would then nominate a principal contact and fill in the nomination form with a number of sections (*i.e.* principal contact details, demonstration team details, demonstration details, description of proposal, description of innovation and expected benefits, national and specific KPIs and key milestones).

The most important part of the nomination form was the description of the proposed innovation. Although detailed, this part of the form caused confusion by overly emphasising areas that project teams were not familiar with like organisational culture, external relations and business processes. On top of that, the majority of sub-sections included poorly defined tick boxes which very often yielded contradicting results.

Innovation details from the nomination form were then incorporated into the introductory part of the IRF. The purpose of this latter form was to summarise a completed project in order to produce a case history for wider dissemination of achieved innovations.

## 2.2 Assessment of Applications

When ready a demonstration project team would present their intended actions to cluster peers (Radosavljević *et al*, 2004). The purpose of the initial presentation was to demonstrate to a wider construction audience what the team want to do, and how and what they want to achieve. The main assessment criteria were therefore related to clarity of presentations and not directly to the quality of proposals. The cluster peers would assess presentations using a 5-point Likert scale against the following criteria:

1. Were the innovations being demonstrated made clear?
2. Was it made clear how the innovation will be implemented?
3. Were you clear why the innovation will be implemented?
4. Were the key drivers for change utilised clearly presented?

Demonstration project teams would pass if they obtained an average score of 3.5 from each of the assessors in all four criteria. The final presentation was the next step in the process but it was only initiated after the project completion assuming that the team achieved desired results. This time they would present achievements against national and project-specific KPIs. The cluster peers would again assess only the quality of presentation using a 5-point Likert scale against the above and the following additional criteria:

1. Were the benefits and impact of the innovations made clear?
2. Were the mechanisms for measurement defined?
3. Was it clear who the main beneficiaries were?
4. Were the main issues clearly defined during implementation of the innovation?
5. Was the innovation transferability to other projects defined?
6. Were the key lessons and recommendations defined?

Again, demonstration project teams would pass if they obtained an average score of 3.5 from each of the assessors but this time in all ten criteria. This was the last step of the process and from this point onwards project teams and their companies were allowed to use demonstration programme branding.

## 2.3 Dissemination of Results

All basic details of demonstration projects were already accessible on the CE website immediately after the initial presentation but the main dissemination of results commenced with the production of a case history. A case history was a two-page document that highlighted project partners, major achievements and main beneficiaries. The purpose of case histories was actually twofold. Project teams were using them for their marketing purposes to show potential clients their abilities to outperform plans and expectations. On the other hand case histories were used to promote innovation and best practice to the industry. Namely, the main objective of the demonstration programme was and still is to improve the performance of the construction industry. In addition to case histories regional coordinators would also organise a series of show case events across Scotland in order to stimulate other companies to embark on innovative practices.

## 3 Weaknesses in Old Procedures

There were several problems with old procedures (Dauber *et al*, 2004a, 2004b). Cluster coordinators were under pressure to produce at least ten new Demonstration Projects a year. In our view, this encouraged an unhealthy emphasis on quantity rather than quality. We therefore analysed the existing procedures and identified the following weaknesses:

- there was no rigorous process of selecting demonstration projects which are truly innovative (the peer review process assesses only the quality of the presentations rather than the quality of the innovation leading to declining interest amongst cluster members)
- there was an unhealthy emphasis on quantity rather than quality (the number of recruited projects was the main driver irrespective of their nature, suitability and often even validity)
- little advice was provided to demonstration project teams either in developing a suitable project, in monitoring its progress or in implementing the innovative features (this was partly because the focus on quantity leaves cluster coordinators with little time for serious and continuing engagement with project teams)
- the paperwork was lengthy, confusing and complex (this created resistance to embarking on a demonstration project)
- the national KPIs were not always appropriate (construction is a diverse industry and national KPIs often do not reflect a specific nature of involved projects)
- there were no penalties for non-compliance with the procedures such as failure to submit all the information required to complete the process (IRF, KPIs, etc).
- there was no mechanism in place to encourage the sharing of failures as well as success (innovations regularly result in excessive costs and time, and other infancy problems but such projects were actually eliminated from the process)
- because the operating procedures were not clearly written it was difficult to keep the administrative database and website up to date (project teams were often struggling in providing information due to a lack of clear procedures resulting in updating delays)

These weaknesses had to be eliminated if the programme was to gain prestigious status and wider acceptance by the industry. As a result we have developed new and much more rigorous procedures with the aim to improve the image of the programme and turn it into a successful innovation driving force.

## 4 New procedures

The purpose of new procedures was to eliminate the above weaknesses so we haven't changed all sections on an equal basis. While some sections were appropriate some had to undergo drastic changes and some were even abolished in order to prevent duplication and unnecessary work (Dauber *et al*, 2004b). The improvement process yielded the following steps (*see* Figure 1):

- submission of applications (*i.e.* Nomination Form and first part of the Innovation Review Form )
- expert panel evaluation (*i.e.* innovation, exceptional performance or rejection if neither of the two are covered in the proposal)
- assessment of the application by a peer review group (*i.e.* assessed initial Cluster meeting presentation using first four criteria of a Peer Assessment Form and assessed final Cluster meeting presentation using all ten criteria of a Peer Assessment Form)
- interim site visits and evaluation of the implementation process, and additional presentations if a project is longer than a year
- dissemination of results (*i.e.* case histories, posters, exhibitions, show-case events, awareness events, etc.).

The first achievement was a database of innovations previously only considered for demonstration project status. The database has been made available to potential demonstration project teams so that they can make an early judgement about the novelty of their project. The database is updated regularly and immediately after any project is accepted as a demonstration.

### 4.1 Submission and Acceptance

Demonstration projects may arise in one of two ways; a company may make a proposal, or the Forum/Centre may invite applications for demonstrations of innovation in particular areas. In either case, a company wishing to submit a demonstration proposal will need to provide a detailed description of the proposed innovation, the reasons for the innovation and its potential benefits. A template has been developed for these purposes by the Cluster coordinators (Dauber *et al*, 2004b). The application has been limited to six pages. The report is then submitted in confidence to the Cluster coordinators who give it a unique identification code and send it to the expert panel established by the cluster coordinators and endorsed by the Forum (Radosavljević *et al*, 2005b). The database of previous applications for demonstration project status has been made available to the expert panel.

The expert panel is a new construct that did not exist before. Its purpose is to establish whether a proposed demonstration is innovation or exceptional performance. The phrase "best practice" has been intentionally avoided since we wanted to emphasise that only superior performance is acceptable. Every company willing to submit a demonstration project in this category should be able to prove that demonstrated processes will lead to exceptional performance. In doing so they may use conventional processes, methodologies, equipment or materials. Exceptional performance is demonstrated through the achieved results, which should be better than those achieved by the rest of the Scottish construction industry. Because it would be very difficult and time consuming for the expert panel to determine what represents exceptional performance suitable evidence and benchmarks should be submitted by demonstration teams.

Innovation, on the other hand, has been limited to Scotland. With that any innovative idea that comes from other UK regions or from overseas may be treated as innovation if implemented in Scotland for the first time. That is also one of the main reasons for adopting the expert panel who in collaboration with the regional coordinators make sure that implemented ideas are innovations within the Scottish context. Innovations have been therefore defined as any applied processes, methodologies or use of equipment or material that differ from standard practice and that have not been presented in Scotland previously. The Scottish regional coordinators administer the database of all projects containing elements of innovations and exceptional performance and provide help to the expert panel by verifying whether a particular innovation has already been successfully demonstrated in Scotland.

#### **4.2 Interim Evaluation and Site Visits**

One of the major shortcomings of the old procedures was a quiet period in between the initial and final presentations. It was simply assumed that the teams would implement intended actions and there were no procedures in place that would monitor the implementation phase. We have proposed a special monitoring regime including regular site visits, meetings and reviews but this regime will only be implemented when the new Scottish Construction Innovation and Excellence Centre is fully operational, which is planned for 2007. As a consequence the improved programme demonstrated through a flow diagram in Figure 1 does not yet contain the monitoring regime.

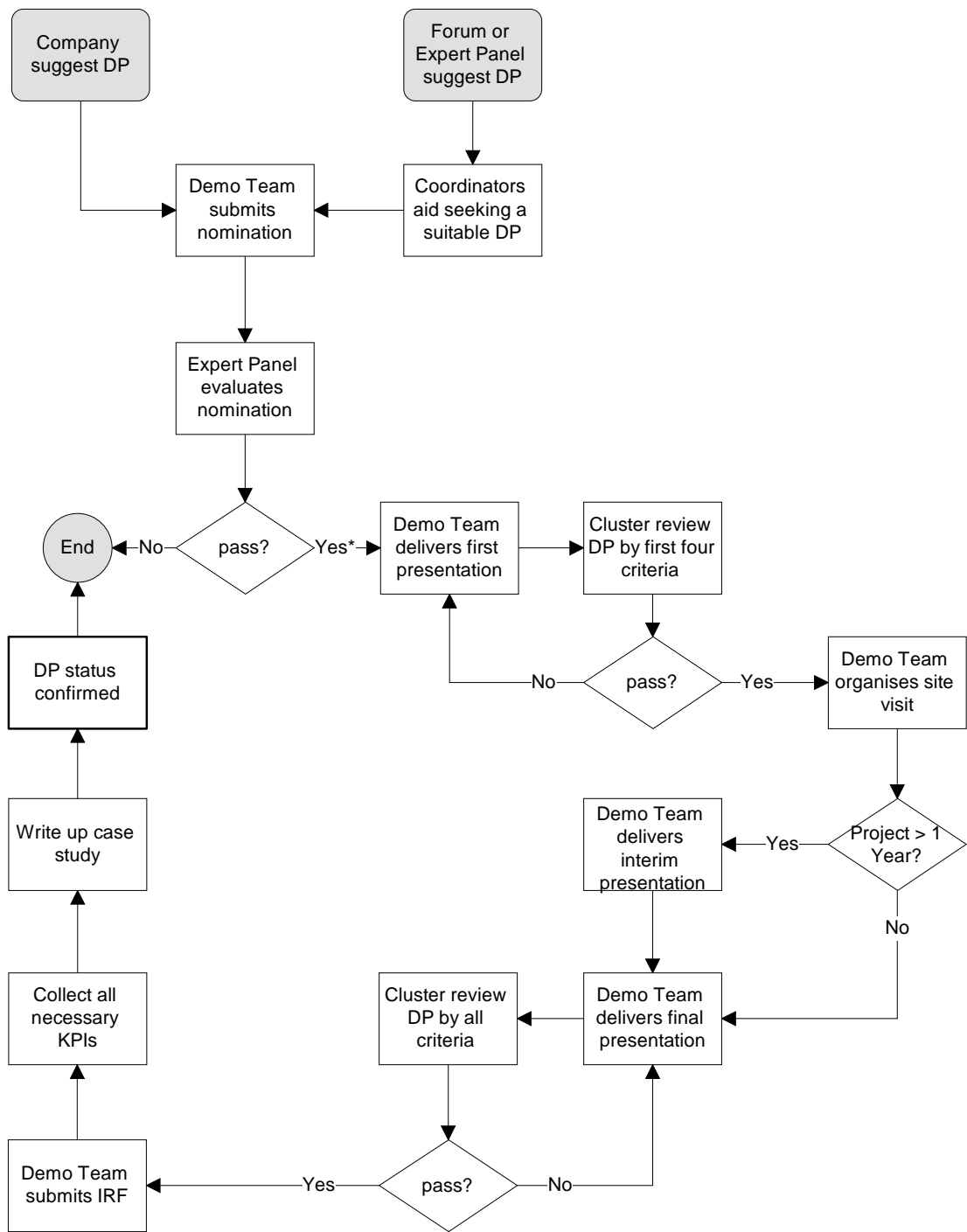
Each accepted demonstration project must also offer a site visit for the cluster peers. In the case of projects which last longer than a year, one or more interim presentations are also required. A project will proceed to a final presentation only if the first three stages are successfully accomplished (*i.e.* expert panel acceptance, initial presentation acceptance, a site visit and, in the case of projects lasting longer than a year, one or more interim presentations).

#### **4.3 Completion and Dissemination**

In order for the status of a demonstration project to be conferred, all the above stages would have to be successfully accomplished, and with the help of the Cluster coordinators, a case study written up and published. Companies involved would then be eligible to use the demonstration project branding for their own purposes. We have also proposed and developed a certificate that is now awarded to every successful project at one of the prestigious national events (Radosavljević, 2006). The first such certificates were awarded with substantial publicity at the 2006 Scottish Construction Forum Conference. New procedures also allow for so called retrospective projects where a project team has to give only one presentation but are instead awarded a project review certificate.

However, the dissemination stage itself was largely enhanced. Case histories were expanded to a four-page format with a much more detailed overview of activities and implemented innovations (Dauber *et al*, 2004c). The objective was to show exactly how innovations were implemented or how exceptional performance was achieved. This new format has been very well accepted and as a result the contact database has seen expansion to more than 300 individuals from around 150 organisations and companies. Each successful project is also presented through posters at so called show case and awareness events, or large construction-related exhibitions (Radosavljević *et al*, 2005a).





\* Failure to complete any of the following processes automatically leads to exclusion from the programme.

*Fig. 1: Flow chart of the selection and implementation process*

## **5 Discussion and Conclusions**

Demonstration Projects are an initiative developed in response to demands presented in the 1998 Egan Report. They were initially an element of governmentally funded movement for innovation (M4I) a part of Rethinking Construction, a very fluid umbrella organisation that has since gone through many transformations. It has recently been totally restructured and is now bearing a name Constructing Excellence in the Built Environment (CEBE). However, developments in Scotland have taken a very different path. As a consequence of devolution and different funding principles Scotland has witnessed different developments. An attempt to overcome funding discrepancies and keep the momentum has introduced the so called Demonstration Projects Coordinators at the University of Dundee whose responsibility was to revitalise Scottish Demonstration Projects. Nevertheless, our team has since done much more than that. Demonstration Projects are now a major initiative within the newly established Scottish Construction Innovation and Excellence Centre, a part of Scottish Construction Forum that is an umbrella organisation funded by the Scottish Executive through Scottish Enterprise Glasgow.

The team has not only revitalised the initiative but also changed its scope, purpose and a whole set of procedures. It was hoped that the new procedures and stringent evaluation process involving an expert panel would gain much needed recognition of the industry. While any project could be accepted and gained a demonstration status under old procedures, new selection process accepts only such projects that involve true innovations within the Scottish context or demonstrate exceptional performance in comparison to other companies in the Scottish construction industry. In order to make the process successful the expert panel evaluates potential demonstration projects and determines whether or not they satisfy strictly defined criteria. If successful, the project team would need to organise a so called cluster meeting and give a presentation to the industry peers who assess it against another set of criteria which in essence evaluate how well the intended actions are explained. After that a project team is responsible for the implementation and monitoring using their own or a standard set of KPIs. They organise interim site visits and presentations if projects are longer than a year but generally conclude their assessment with a final peer-assessed presentation. A successful project then enters the final stage where the project team in conjunction with the Demonstration Projects Coordinators prepare a four-page case history. The final act is an award ceremony where successful project teams receive prestigious certificates marking the successful completion. The new procedures also accept retrospective projects where a project team has to give only one presentation but are instead awarded a project review certificate.

Although more than two years were needed to revitalise the initiative and introduce the new procedures, the Demonstration Projects are now an integral element of the Scottish construction industry. Cluster meetings that also involve presentations on state of the art products and processes from around the world now regularly attract between 30 and 60 delegates from all sectors of the Scottish construction industry. The main goal has been achieved. The industry now accepts the initiative as one of the major sources of innovative ideas. The next logical step is to evaluate and constantly monitor the impact of the programme on the Scottish construction industry and the regional economy as a whole, and further improve the programme.

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