



INNOVATION IN THE MANAGEMENT OF MAJOR PROJECTS

Report of seminar 153 held on 3rd February 2010
at No 4 Hamilton Place, London

SUMMARY

KEY CONCLUSIONS

- One definition of innovation is newness that is useful to the organisation.
- An organisation needs appropriate people, process and climate (observable habits).
- An organisation must have an ability and willingness to learn, supported by 'explorers' and 'developers'.
- An organisation should create permission for people to take risks and provide process and passion (at all levels).
- It is not normally possible to undertake innovation on projects after conception stage unless business leaders provide space and resources.
- Although regulated sectors can be stifled, it is possible to encourage innovation if clear time limit targets are set – e.g. carbon emissions.
- In order not to have spiky innovations within businesses, you need to install structured feedback loops to achieve managed continual processes to drive innovation and excellence.
- Businesses innovate either to bring about improvements or simply to stay in business.
- Observation, curiosity and permission allow creativity. The challenge is how to evaluate the idea and how to know which ones to back – largely through judgement. A barrier to making innovation work is the fear of big risks.

These are the views of Malcolm Noyce, Executive Director, MPA

The key objective of the seminar was 'How to recognise innovation and apply it.'

A competitive world requires novel, original solutions to win and perform, but innovation is difficult to both define and manage. For example, can innovation be switched on when it is most needed? Are some organisations naturally better at being creative? How important is culture, leadership, knowledge and process in developing the winning solution? Are there tools and techniques which can help?

Although there is a tendency to think of innovation in terms of product and processes, the term and the skill can be applied to the many disciplines throughout the project life cycle: strategy, marketing, finance, legal, design, operations, supply chain and change. All of these can make a real difference to project success.

Through presentations covering examples of outstanding innovation based on a number of case histories, the seminar discussed what differentiates these from similar projects, for instance making them faster, cheaper or more successful.

The event provided delegates with an up to date view of best practice, and how innovation might be applied to their businesses and projects.

THE FOUR ESSENTIAL PS FOR INNOVATION

Innovation is important to organisations, but there are myths, doubts and uncertainties surrounding it, which can cause inertia. In their presentation, innovation consultancy Perspectiv defined the term as 'Newness that is useful'. Some of the assumptions and challenges associated with innovation were looked at; for example how to get an organisation to innovate, and what separates the best innovation from the worst.

There has been a tendency for innovation to be thought of in terms of new product and service development. However, a global survey by PricewaterhouseCoopers showed that most respondents put it sixth in a list of ten innovation priorities:

- Customer/supplier relationships
- Services
- Use of IT
- Internal processes
- Finance and cost management
- Products
- Recruitment and promotion practices
- Organisation structure
- Brands
- Buildings and infrastructure

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There is no perfect recipe for innovation, but there is a recognised and widely used framework that has emerged over 50 years of research, development and experience. The framework highlights four essential 'Ps' that are needed for sustainable innovation, and the key is to ensure they are all addressed: any initiative that does not incorporate all four Ps will achieve limited results.

In order of priority the 4Ps are:

Press: the psychological environment with a focus on the workplace climate that 'presses on our mind'

People: the heart of the system with a focus on the laws of behaviour

Process: the deliberate use of methods, tools and language for innovation

Product: the outcome or need which includes new products/services

The presentation examined the interaction of the 4Ps, and in particular *Press*, where the type of workplace climate can make crucial differences to innovation. For instance the freedom to explore possible options is key to innovation: in a 'productive' climate there will be the opportunity for independent choice, whereas in a 'stagnated' climate the atmosphere will be passive and rule bound. It also looked at some of the many different methods and techniques for innovation commonly used by organisations, such as Creative Problem Solving or Six Sigma, and examples of how methods can be usefully integrated.

A MODEL FOR SUCCESSFUL INNOVATION

To be successful and fit in with the requirements of business, innovation needs to be both useful and valuable. Advance Consultancy looked at different types of innovation, how diversification of process or product means changing the business model and core competence of an organisation, and outlined some case studies.

A model that can help to create the conditions conducive for innovation and avoid failure was examined in detail. It involves the nine 'Ps' listed below.

Permission	Plimsoll line
Policy	Policed by all
Protection	Promoted by all
Physical space	Passion
Process	

Each of these Ps is a factor which facilitates innovation. For example, the first three constitute the psychological and emotional 'climate', which is created by leadership giving permission for people to take risks with the understanding that their ideas will be taken seriously.

Leadership has an important role in setting the threshold or Plimsoll line. The threshold determines what is acceptable in terms of quality, and needs to be policed and promoted by all. Joint ownership of a project means commitment, which relies on mutual respect and trust, and gives the opportunity to link ideas. Organisations should decide which combination of the Ps would help to generate more innovation.

Various case histories were examined, looking at why they were either successes or failures. For instance, on a rail track project, improved safety was achieved through leadership changes and more effective training and timing assessment. An oil extraction project led to design improvements, new health and safety standards and an early project finish at a lower cost, giving early revenue to the customer and additional profit to the contractor. Conversely, a rail innovation initiative produced no positive outcome and the likelihood that any subsequent change would be resisted.

IMPROVING BUSINESS PERFORMANCE THROUGH INNOVATION

The purpose of innovation in business is to improve performance; this is not the incremental change in business as usual, but a step change that delivers significant benefit. This presentation looked at innovation at BAA, who chose to innovate to increase the performance of an already successful company.

Innovation must be nurtured, which involves support from the top of an organisation and the creation of the right psychological and physical environment. Other key factors for success include a funded process to assess the benefits to the business, appointing the people with the right skills and collaboration with clients, consultants and suppliers. And since some ideas will not make it to maturity, it is important to be able to tolerate failure.

Within BAA the right governance structure was put in place for reviewing an idea and deciding whether it should be developed, which provided the necessary control within the organisation's limited resources. A clear distinction was made between those who managed and developed the idea and those who would apply it in the project environment.

Two of BAA's innovative projects were discussed: the Pier Facilities Strategy, involving walkways to take passengers from the airport terminal building to the aircraft, and the Baggage Power Trolley System, which will change the way bags are handled at airports.

Both of these programmes involve the transference of technology or method from one industry sector to another: the Pier programme uses construction techniques from the shipbuilding industry, whilst the power trolley system uses proven technology first developed at a Ford car manufacturing plant in Belgium. It was noted that organisations should encourage links between industry sectors by making arrangements for people to get together to share ideas and knowledge.

This presentation looked at the main findings and recommendations of the Centre for Innovative and Collaborative Engineering (CICE) report prepared by John Findlay entitled *Innovation Process in the Construction Sector*. Published in 2009, the report is based on interviews with senior UK construction sector executives and is designed to improve understanding of their approach and decision making when considering innovation.

The report provides a broad indication of attitudes and organisational focus within the construction industry, and the perceived role of formal research. Its recommendations were outlined, including a number which involve collective action.

Overall, there is a feeling that the change in the industry's outlook is conducive to innovation.

The initial findings were summarised as follows:

- Innovation is important
- Disruptive or radical innovation is largely missing from this sector
- Generally there is goodwill for innovation and collaboration
- Hidden innovation is more widespread than is realised
- Breadth of thinking is not always recognised

It was noted that seeing innovation as important is a very big change from the views of perhaps five or seven years ago. 'Disruptive innovation' – where the work process is radically changed over a short period of time – was not specifically raised by the participants, but it may be needed, and old habits might have to be 'unlearned' in order to embrace and implement innovative ideas.

In conclusion, the presentation looked at how the attitudes to innovation reinforce the challenges implied by the 'blockers' to progress outlined in the 2009 review *Never Waste a Good Crisis*, which considers the progress made by the construction sector since the Egan report '*Rethinking Construction*'. For example, big changes were likely to be too difficult and not in line with comfortable timescales. However, issues such as climate change and the sustainability initiative can only be realistically and effectively tackled by a collective effort requiring new construction techniques and new business models.

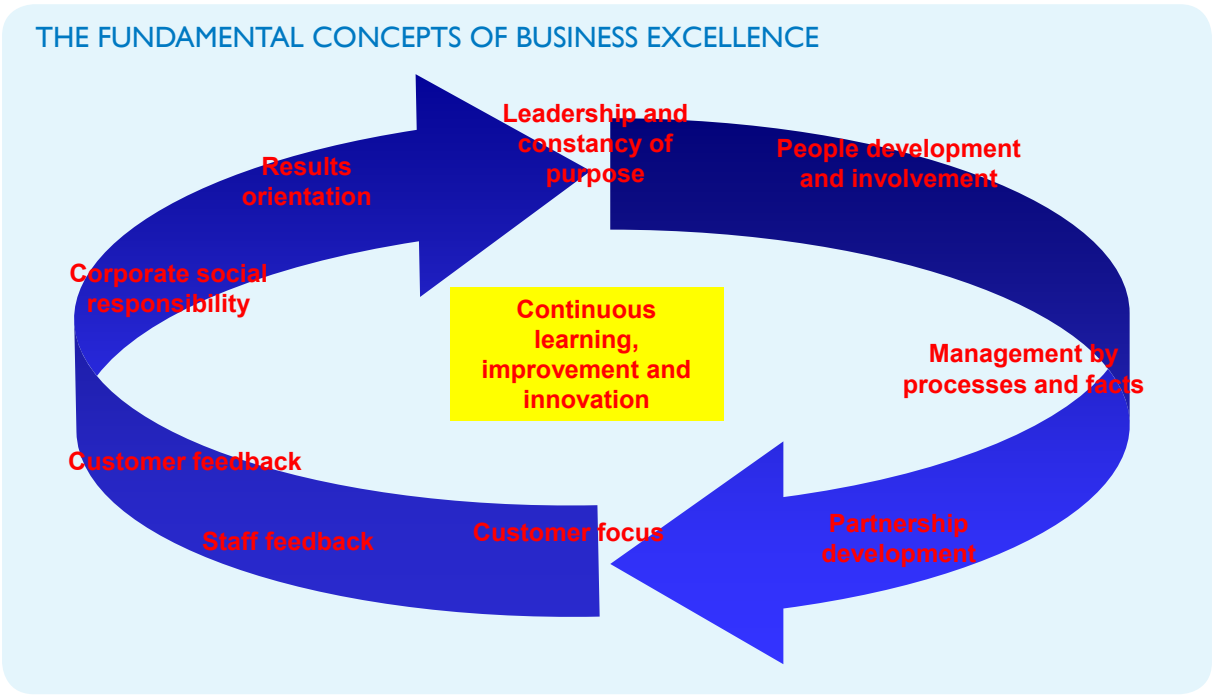
THE POTENTIAL OF BUSINESS EXCELLENCE IN DEVELOPING AN INNOVATIVE APPROACH

The presentation from Halcrow's consulting business group explored the nature of innovation as a process rather than an event. A key aspect of this is the feedback loop, which compares outputs with original objectives as the basis for instigating some corrective change. This ensures not only that new ideas emerge, but that such innovations are closely linked with a specific problem or opportunity and have a usable application.

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As a process, innovation links the building blocks of an organisation into a continuous loop. The linked building blocks involve the management of people, strategic processes defining policy and strategy, tactical processes, operational processes and also assessment processes to indicate how well a business is doing in meeting its objectives. Where there is good process, there tends to be a feedback loop that drives the good organisation, which in turn drives more innovation.

Frameworks exist to hard-wire innovation into firms and projects. For instance, the business excellence family of methods comprises a number of different models which are constructed around the feedback loop of: 'plan, implement, assess, review and change'. Learning and innovation lie at the centre, and link the fundamental concepts of business excellence.



The practical application of business excellence methods, such as the [EFQM Business Excellence Model](#) was reviewed in a selection of case studies; topics included organisational culture change, people management, aligning partners through procurement and process improvement.

It was noted that there is increasing evidence that organisations that apply business excellence techniques are more successful than those who do not: these methods fundamentally drive a feedback loop, which in turn drives innovation.

Chiltern Railways was formed as a result of the privatisation of British Rail in 1996 and operates mainline passenger trains from Marylebone Station in London to Birmingham. Initially franchised to a company formed by the British Rail managers of the route, in 2003 the line became a wholly owned subsidiary of Laing Rail. In 2008 Laing Rail was taken over by Germany's Deutsche Bahn AG.

This presentation focused on the novel mechanism employed to fund a major infrastructure upgrade on the Chiltern route, and the reasons why innovation was necessary. It looked at the key success factors, the downsides of the approach, and its potential application both within and beyond the rail sector.

In 1996 the trains and infrastructure were old and decrepit, and as use of the line progressively increased, investment was required in order to meet both passenger demand and the conditions of the franchise. However, the investment opportunity was constrained by the scale of the investment relative to the Chiltern Railways' balance sheet and turnover. Another challenge was how a franchised train operating company could be innovative within the very tightly regulated railway industry structure.

The key areas of innovation were both operational and financial. For example, instead of Network Rail prescribing track and signalling modifications, the company researched the infrastructure constraints, scoped the project and accepted operational risk of the infrastructure delivering the performance required. The investment mechanism adopted involved Chiltern Railways as a capital constrained operator selling on the infrastructure to Network Rail after delivery.

The project was delivered on time and within budget, and has enabled Chiltern Railways to deliver an enhanced passenger service on its London to Birmingham route.

INNOVATION IN PRACTICE – DEVELOPING NETWORK CAPABILITY IN THE RAIL SECTOR

The Victoria Line upgrade was delivered through Metronet for London Underground as a Public Private Partnership (PPP). Delivering the project was a challenging prospect, involving changes to operational interfaces whilst the line continued to carry half a million customers a day. Parsons Brinckerhoff described the complexity of the task and how innovative thinking pulled all aspects of the programme together.

Scoping and costing out this complicated and technically challenging project, and putting together an integrated schedule for 36 different sub-projects involved an extensive exercise. With so many things happening simultaneously, a large amount of systems engineering had to be carried out to integrate the project technically, not only from a functional standpoint, but to satisfy the performance targets.

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Given the very difficult environment and the complexities of project implementation the programme modelling needed to be innovative: traditional programme management and system engineering techniques were not enough. The seminar heard how the team developed an innovative way of integrating the schedule and the engineering, with the focus on the end goal and a clear path to delivery.

All this had to be communicated in a clear and simple way, which was achieved by using the schematic diagram of the London Underground to represent the programme schedule. A 'Tubemap' was devised on which key project milestones were represented as 'stations'. Milestones were picked if they had major programme implications or, more importantly, had an impact on the operations of the railway.

Each of the stations on the Tubemap identified a milestone on a sub-project with a list of the associated works alongside. This meant that every person connected with the project knew the part they played without looking at the whole schedule. At all levels everybody could see and knew what they were doing, where they were heading and how they would get there. Every milestone had a definition, both from an engineering and a programme standpoint.

In July 2009 the first new automatically controlled train came into service and the trains are now running on both weekdays and weekends.

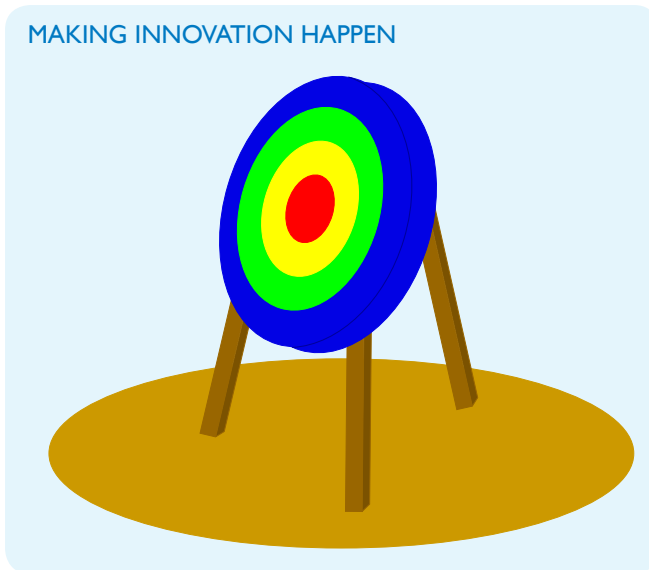
A STRATEGIC ENTERPRISE VIEW

The final session was from the Silver Bullet Machine Manufacturing Company, a business which focuses on creating organisational creativity and innovation. Drawing together many of the aspects discussed during the seminar, delegates were provided with pragmatic and down-to-earth guidance as to what they could do on 'Monday morning' to make innovation happen in their organisations.

Two of the fundamental requirements for innovation are both difficult to create by diktat: a culture that looks for new ideas, and leaders who know which ideas to back. Becoming more innovative is difficult to achieve and manage, and even if it is an acknowledged need, there will be inhibiting factors. For instance innovation can slip down the agenda because there is always something more urgent to do; there might be a clash of working styles or, since risk is involved, it may be more comfortable to maintain the status quo.

An enterprise-wide approach is needed for an organisation to become more innovative, and it was noted that the key spur to creativity and innovation is not learning, but curiosity: the desire to imagine how things might be different from their current state.

Innovation can be viewed as a four-stage business process, represented by the 'target' diagram below:



- Red zone: idea generation – the act of creativity, the generation of an idea
- Yellow zone: evaluation – the judgement as to whether the idea is 'good' or 'bad'
- Green zone: development: – the process of making the idea fully fit for purpose
- Blue zone: implementation – the roll-out or launch of the idea

The target rests on the 'ground', which is the organisational will to innovate, and is supported by three legs, which are the conditions needed for innovation. The 'back leg' represents the provision of suitable finance – as with any change programme innovation requires some investment. – and the two 'front legs' represent 'motivators' and 'enablers'. These are the conditions needed to motivate and enable people to be more innovative, for example the availability of budgets, the provision of training, appropriate recognition and reward, and the role of senior management.

It was suggested that delegates could initiate a brief review within their organisation and, using a checklist of 'motivators' and 'enablers', establish which ones do or do not actively support creativity and innovation, and then tackle any which, inadvertently, hinder creativity and innovation.

CONCLUSION

In concluding the proceedings the Chairman, Professor Quentin Lieper, noted that innovation is a business imperative not only for improvement, but also for survival.

The day's presentations and discussions provided much food for thought not only on why innovation is necessary, but how to bring innovative ideas to maturity. For instance, joint ownership and mutual respect for experience and capability are key, as is continuous interaction between the members of the workforce and the whole organisation.



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