

2014, the Institution's policy team will prepare a series of short briefing papers under each of the action headings highlighted in the report. These will be used to target engagement with Associate Parliamentary Groups, Select Committees and Members of both Houses who have expressed interest in specific issues where chemical engineering can make a difference. Given the international nature of IChemE's membership, this work will not be solely confined to the UK.

Chemical Engineering Matters should prove of interest to all those whose work is

connected with government policy-making at local, national or international level. IChemE is an advocate for solutions that will support a safer and more sustainable world. If you think that our members can be a useful addition to your contact book please get in touch. To continue the conversation please email chemengmatters@icheme.org or call Dr. Alana Collis at the Institution of Chemical Engineers on 01788 534484.

References

- i www.whynotchemeng.com
- ii www.icheme.org/roadmap2007
- iii www.icheme.org/chemengmatters

ABOUT IChemE

A member of the Parliamentary & Scientific Committee, the Institution of Chemical Engineers (IChemE) is the global professional membership organisation for people with relevant experience or an interest in chemical engineering. It is the only organisation to award Chartered Chemical Engineer status.

IChemE is also licensed to award the titles of Chartered Engineer (CEng), Chartered Scientist (CSi) and Chartered Environmentalist (CEnv) to suitably qualified members. Founded in 1922 as a professional institution for chemical and process engineers, IChemE has grown to its current status of 38,000 members across 120 countries. IChemE currently has offices in Australia, China, Malaysia, New Zealand and the UK.

INVESTOR IN INNOVATIONS®: A New Industry Standard



Dr Alison Todman FIKE
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Can organisations afford not to invest in innovation? All recent business surveys have identified innovation as an imperative for any business to compete and grow. In recent years, considerable effort has gone into exploring the theory and practice of innovation in an attempt to capture the elusive organisational culture that underlies the ability of some organisations to excel, and to gain a competitive advantage over their peers. Leaders of industry are united in calling for innovation to be prioritised, which in turn requires an appetite for risk, resilience and the ability to adapt to changing landscapes.



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At Innovisions 2012 conference, Jo Lopes, Head of Technical Excellence at Jaguar Land Rover said *"Innovation is a key part of any engineer's toolbox. Innovation is the soul of engineering – it provides an engineering company with a competitive edge"*. The East of England Development Agency claims that *"Innovation plays a critical role in economic development and growth."*¹

To NEF, innovation is not an abstract concept, but a vital process that develops new products and markets and improves business performance. It is the successful implementation of creative ideas that enables an organisation to survive, adapt, change and maintain its competitive advantage. This definition is very general so that it can be used throughout education and across

all sectors of industry. While our work builds on significant research by leading experts, it also challenges and blurs some of the traditional boundaries between disciplines that are often treated as being outside innovation.

NEF Investor in Innovations® is an industry standard that identifies organisations whose culture and

practice feature the defining characteristics shown to lead to effective and sustainable innovation. This evaluates the innovation practice of an organisation against the NEF Innovation Assured framework which is based on a set of criteria derived from research. This approach allows an organisation not only to evaluate its own practice, but to demonstrate its commitment towards innovation to its clients, employees, and the wider public. It recognises the different contexts in which innovation takes place in small and large organisations, and in different sectors of industry. To achieve the award, organisations must demonstrate practice

... in-depth understanding of customers ...

developing the capacity to exploit opportunities and respond to the external environment with agility. The strategy and structure must be founded on a comprehensive understanding of core capabilities in the organisation, knowledge of competitors and similar industries, and an in-depth understanding of customers or clients. Metrics of benchmarking are needed to evaluate the effectiveness and impact of innovation and to highlight potential improvements to the innovation process. NEF

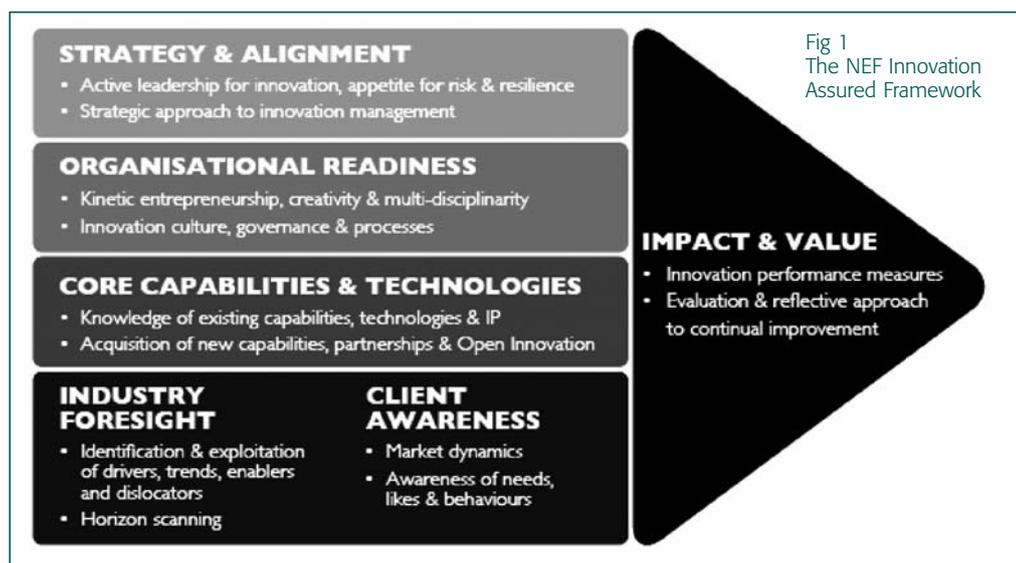
ORGANISATIONAL CULTURE AND THE "ADJACENT POSSIBLE"

Knowledge of an organisation's own competencies and resources, customers, clients and competitors, and advances in technologies and/or processes with the potential to impact on its business, are fundamental to the management of innovation. This enables an organisation to identify the creative potential for change, and also the limitations and constraints, the so-called

develop their ideas to fruition. As Dave Drury, Chancellor of EDF Energy Campus states, "Innovation is about having a different state of mind and getting the best out of the processes and people within the organisation – allowing people to contribute to the organisation in a novel way".

It is clear that some environments stimulate innovation apparently effortlessly while others inhibit it and, although the precise nature of such an environment will vary from organisation to organisation, there are characteristics that can be identified as supporting innovation. These can be seen in the structures and activities that are part of the working environment⁵. Significant innovation often comes about through borrowing ideas and technology from an entirely different field and putting them to work to solve an unrelated problem (known as exaptation). For an organisation to maximise the possibility of this happening, it needs to promote knowledge sharing and develop broad networks that extend outside the organisation to involve people from diverse fields of expertise.

New ideas also come about through chance meetings and discussions with people from different disciplines or different parts of an organisation. Organisations need to create opportunities for these random collisions to occur, both internally and externally. It has been shown, for example, that proximity and physical environment have a role to play in encouraging innovation⁶. The quickest way to stifle innovation is to isolate people in single offices behind closed doors. Shared spaces where people have the opportunity to meet



appropriate to the context in which they operate.

A MODEL FOR INNOVATION MANAGEMENT: A STRATEGIC APPROACH

Management studies^{2,3} have pointed to the importance of strategy and alignment in ensuring the successful delivery of innovation. An organisational structure that supports formal (governance) and informal (cultural) mechanisms to encourage innovation is vital in

has taken the concepts highlighted in these studies and has expanded them within its Innovation Assured framework. This framework further identifies key characteristics within the categories shown in Figure 1 which allow an organisation to explore the details of its innovation function and to benchmark it in a systematic manner.

"adjacent possible"⁴. Most innovation, both incremental and radical, is brought about by continual exploration and expansion of the boundaries of the adjacent possible. An innovation culture is about establishing an environment in which individual employees and teams across an organisation can best explore this space and

... opportunity to challenge assumptions ...

... the innovation cycle is about diffusion and adoption ...

informally are essential to provide an innovative environment in which random connections and exchange of ideas can take place. An innovation-driven organisation will build opportunities for its employees to meet with people from other organisations into its normal working practice. Group interaction, group problem-solving, the freedom and opportunity to challenge assumptions are all important in an organisation that takes innovation seriously.

INNOVATION MANAGEMENT: PROCESS AND IMPACT ASSESSMENT

Innovative systems have a tendency to gravitate towards the “edge of chaos”, existing somewhere between too much order and too much anarchy⁷. This could lead organisations to believe that the management of innovation is a bad idea and that a structured approach will stifle the creative process. Evidence suggests that this is not the case. There is a strong correlation between the existence of formalised mechanisms for managing innovation and reported success rates². Good leadership, appropriate organisational structures and innovation governance, are required to increase the effectiveness of innovation. Dr Elaine McMahon, Chief Executive and Principal of Hull College, affirms that *“It is important to have a clear framework for innovation. A role model of success is key.”*

NEF advocates the use of “kinetic” entrepreneurial techniques to identify and assess enablers for growth, to horizon scan new technologies, applications and markets, and to unleash hidden potential and accelerate entrepreneurial innovation. It should also be remembered that a considerable percentage of the innovation cycle is about diffusion and adoption; not simply about invention of new products or services. This means that the marketing function and good communication with customers and users is needed to raise the potential for acceptability, and improve the speed of adoption⁸. The location of innovation activities within an organisation will vary. The existence of key figures to lead the innovation process and effective mechanisms for alignment with

corporate strategy, management decision-making, communication with internal and external stakeholders, knowledge management, resource allocation, and performance evaluation, are all defining features of an innovative organisation. The danger of progressively eroding and diluting ideas as they pass through a structured set of stages may be mitigated by maintaining a cross-disciplinary environment that continually stimulates and challenges at all stages of the process.

Assessment of impact is essential if organisations are to demonstrate success in innovation to their clients and investors. The KPIs and metrics used to evaluate performance are crucial in terms of their impact on the innovation process as these should be used to drive forward improvements. Again, a diversity of metrics should be applied, examples of which are well defined in the literature⁹. The specific metrics used are not the issue here. What is important is that the metrics evaluate the innovation in relation to wider business objectives while being appropriate to the development itself.

INVESTOR IN INNOVATIONS®

The Innovation Assured framework specifies criteria that enable an organisation to evaluate the systems it has in place to support all aspects of the innovation function. This can be used to benchmark the innovation process and highlight

culture that encourages and supports creative practice is a key factor in ensuring retention of staff in hi-tech industries¹⁰ where advanced skills and industry experience are very hard to come by. Economic resilience and ultimately growth depend on organisations recognising the importance of innovation and taking formal steps to ensure that the factors shown by research to enable successful innovation are effectively managed

References

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... metrics evaluate the innovation ...

areas for improvement, if necessary. The NEF Investor in Innovations® standard has an important role to play in publicly highlighting organisations that have demonstrated the capacity and culture to deliver innovation consistently and in a sustainable manner. As well as giving confidence to investors and other stakeholders, this standard signals to high performing potential employees that the organisation takes innovation seriously. Research now indicates that excellence in innovation and an organisational