Finding tomorrow today.

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FINDING TOMORROW TODAY

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1. Introduction

New products and services are the driving force of an organisation. An increasingly turbulent marketplace and shortening lifecycles have meant organisations have to plan further ahead just to survive. It is no longer enough for organisations to restrict their scope of thinking to the next product and service. Success depends on their ability to generate appropriate new products and services well into the future.

Could the effective use of design be considered to be an intangible asset which can enable organisations to successful pre-empt change and 'surprise' the customer? Design is increasingly seen as a key differentiator for products and services but it is rarely mentioned how design can be used to inform the long-term strategic plan (Hollins & Hollins [1999] is an exception).

This paper will describe the findings of research that was undertaken during the first half of 2001. The theme of the research was 'How can design be managed with a focus on 2-10 years into the future'. This builds on the earlier research for the DTI by Topalian and Hollins [1998] that resulted in the publication of BS 7000 part 1 [1999] 'Guide to managing Innovation'. In this standard it is stated:

"Research has revealed that organisations that evolve a framework for long-term innovation react faster to threats or surprises, and are more likely to take effective action, and are better at sustaining the momentum of change".

In spite of the importance of a long-term view having been thus promoted, very little research has been undertaken to identify which companies are doing it. Even less research has shown what these innovative companies do or what similarities they have in the way they structure this.

In this new research the following key issues were explored:

What methodologies are being used within current long-term innovation processes?

Which methodologies are appearing frequently?

Which methodologies are problematical?

How do the potential customers and technologies fit into the framework?

2. Development Funnel

Many design models imply that developing new products is straightforward and ordered. Wheelwright and Clarke's [1992] depiction of the product development funnel shows that the process maybe a bit more haphazard in approach, with a multitude of ideas entering from a number of sources that must be filtered through.

" (The Funnel enables) the folding of a creative set of innovative ideas into a logical set of development projects and ensuring those projects tie in directly to the business strategies" [Wheelwright & Clarke 1992].

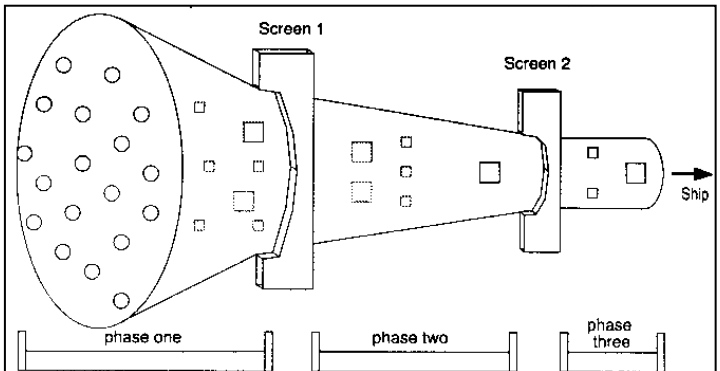

Figure 1: Development Funnel Model III [Wheelwright and Clark 1992] pp.124

3. Methodology

Using the published directory of the SMART award winners 2000, the aim was to conduct the short survey questionnaire with fifty award winners from multiple industries. This was achieved through initially sending 100 emails and then following up e-mails with phone calls.
From this several companies were identified as giving more than mere 'lip service' as to planning products into the future.
This survey was followed by a series of semi-structured interviews with ten respondents all of which were involved in the day to day activities of new product planning or development, but who also felt had an overview of the process as a whole. These people work in eight leading organisations that have a reputation for planning their new products beyond their current development. One particular organisation was then further investigated by one of the authors who spent a period in the company looking more closely at their particular systems and problems.
From this primary research it was possible to build a picture as to what these companies believed worked and, also, what they found didn't work.

3.1 Who was interviewed?

Interviews were conducted in parallel to the survey. A number of key individuals were contacted in order to gain a clear understanding of how the long-term innovation process is carried out. All had involvement in focusing on the long-term and a bias toward design. Those interviewed had shown their willingness to participate further in the project in their responses to an initial questionnaire. All operate in highly competitive marketplaces and all have a proven track record in innovation through both product and service solutions. The main focus of the interviews was to gain more in-depth answers and allow opinion and foresight to be uncovered and compared.
The interviews lasted between 45minutes to an hour. Interviews followed the same structure and were taped. The line of questioning intended to uncover:

- Issues of best practice
- Evidence of processes used
- Evidence of tools used
- Attitudes to the importance of the combination of user and technology research
- Activities which appeared frequently and could be identified as being key to developing with a view on the long-term
- How design could benefit and be managed within the future environment.

Name	Position	Company	Method
Les Wynn	**Head of Industrial Design User interface - Europe**	**Xerox**	**In person**
Responsible for the New Product Development for Europe and parts of Africa and America. Has involvement with Xerox Parc the highly funded research centre in Palo Alto.			
Huw Farmer	**Head of the I.T Research Group**	**BAA**	**In person**
Responsible for technological research and implementation of BAA. Heads up the researching of future focused departments. Involved in Terminal 5 development.			
Mark Delaney	**European Design Manager**	**Samsung**	**In person**
Addresses the implementation of technology led products and performs more long term research in a technologically led organisation. Strong champion of the role of design in the process.			
Liisa Poulakka	**Future trends forecaster**	**Nokia**	**In person**
Heads up the future user forecasting team. Interesting inclusion because of Nokias design focus, and the nature of the telecommunications market being constantly in a state of flux creating a demand for planning a head			
Bill Sermon	**Design Director**	**Nokia**	**In person**
Involved in new product development within Nokia and links into research functions			
David Townson	**Ambassador of Imagineering**	**Orange**	**In person**
Performs the scouting and communication role between the future technology research team and the core business functions of the organisation.			
Chris Townsend	**Manager of Ideas**	**Orange**	**In person**
Involved in the future user research arm of Orange and has a focus of 2 - 10 years. Has a responsibility to understand the technological dependencies for desired user experience.			
Sarah Woods	**Head of the User Experience Team**	**NCR**	**By phone**
Previously involved in both user led and technology led projects within the Knowledge Lab			
Anton Andrews	**Senior Interaction Designer**	**Philips**	**By phone**
Is programme leader of 'Ambient Culture', a project aimed to be developed for 2-10 years in the future.			
Pauline Gleadle	**Innovation Researcher**	**3M**	**By phone**
Has spent time analysising and evaluating the innovation processes within 3M.			

4. Nature of the study

The study lends itself to both quantitative and qualitative investigation. A quantitative approach by conducting the survey highlights if companies are actively focusing beyond their next product or service. To make up for a lack of depth more quantitative methods were conducted. The interviews aim was to uncover issues of tools, processes and methodology used and how these mechanisms work. Also uncovering how design can be placed to provide benefit.

It is evident that a study of this kind can only give an insight into aspects of the practices of managing long term innovation. But it is hoped it can begin to highlight some key stages that can form a backbone to the activity that can be repeated and reveal how design can have beneficial impact.

5. Results

Literature highlights that there are fundamental practices and processes for most activities within organisations. All have definable stages, and within those stages definable activities. These are tools and processes for designing products for the present day and marketing processes and tools for identifying market position and consumer habits.

The key to building the long-term strategy is to identify where you are aiming to go in the first instance. This will enable the identification of the core competencies needed in order to get there.

The long-term innovation process although aimed at future markets must also have definable stages and methodologies. Although they should be flexible and adaptive to accommodate change, goals needs to be set and parameters needs to be identified. By having identified some continuity in the process (a backbone structure), this will enable past successes to be more easily built upon. Some of the results are highlighted below:

5.1 Formalisation. Within the initial survey a large proportion of the organisations questioned do not have a formalised process when conducting long-term innovation projects. 26% had a formalised approach, 8% felt they had a semi-formalised process. 66% had no formalised approach at all.

5.2 Tools. In the main, formal tools were not used to compare and evaluate data from the findings of the research. Of the tools that were evident, criteria tools compared the potential of the finding with costs and time scales in order to establish an output from the finding. There was no tool, which explicitly formalised and compared advances in technology and future user needs. In some organisations prototyping was used to evaluate potential concepts.

5.3 Information control. It was evident from the questionnaire that archiving is a problematic area. The methodologies, for storing past data, currently in use were quite primitive and did not lend itself for use in other projects.

5.4 User requirements. Over half of respondents felt that they did consider the user when developing long-term. But it was evident that those respondents who did have a process had no specific mechanisms in place, in order to address user requirements. Only a small proportion of the sample involved users throughout development, so that product concepts could be assessed. However over half did involve users and user data, at some point during the development process. Prototyping of ideas was the most widely used assessment tool used.

5.6 Communication. Various forms of communication were used. Often more informal methods occurred internally, to cross internal boundaries and build confidence in the long-term work. It was evident that effective communication was paramount to the successful development of future products and service innovations. This meant the future focused work maintaining a consistent presence and the right degree of integration within the organisation. Within the long-term arena it was evident that it was necessary to effectively communicate methodologies behind outputs in order to substantiate findings.

5.7 Barriers. Problematic areas were highlighted as financial and managing market uncertainty. Understanding the application and relevance of a technology also proved to be a problematic area.

Despite its perceived importance there has been no real formalisation of the research process within the organisations investigated. This seems to be due to the diversity of the projects being tackled, requiring adaptability in the methodology used. Only Philips and BAA were able to represent their design innovation processes.

5.8 Culture and Climate. Having a culture, which supports innovation was found in the research as a trait that is common within organisations that seem to innovate consistently. Haragadon and Sutton [2000] highlighted key techniques that could be applied to most organisations as the techniques are deep rooted throughout. The techniques they refer to as the 'knowledge brokering cycle' are made up of four inter-twined practices all focused on the collective development of ideas. The four stages are described as:

- Capturing good ideas.
- Keeping ideas alive.
- Imagining new uses for old ideas.
- Putting promising concepts to the test

All stages rely on a common denominator, a function that allows ideas to be spread around the organisation to be tried and tested for their potential, and is referred to as knowledge brokering.

Two key differentiators for building a future focused project were seen as embracing new technology and identifying latent user needs. Both are areas which companies can be proactive in developing knowledge and gathering information. In many of the companies interviewed it seemed that the main source of development was from technological advancements rather than identifying latent user needs. However all saw the future user experience as being an essential part to successful research activity. The difficulty was coupling the two effectively to provide future solutions of 'real' benefit.

Long-term innovation is characterised by a complex divergence of possible opportunities and developments, which occur either through great foresight or a great deal of luck. Those involved within this climate view uncertainty and instability as the expected norm with acceptance of failure and constant adaptation fundamental to success.

5.9 Activities. Being hybrid in your approach was imperative, as addressing projects concentrating on the fundamentally new requires an adaptive process in order to reflect this. However findings

suggested that there were common pockets of activities which were repeated in all of the organisations interviewed. But to differing degrees and orders depending on the project requirements. This suggests that a repeatable 'pool' of activities can be identified and their relevance assessed and drawn upon once the specific project requirements are fully understood.

6. Process.

Wheelwright and Clark's [1992] funnel and Coopers stage gate [1993] concepts highlight a formulaic process. This allows a product to flow from one stage to the next, with set stages for evaluation to assess the progress of the project throughout. However the primary research revealed scepticism about such an approach. With 33 of the 50 respondents within the survey and 6 of the 7 interviewed having no formalised approach to developing for the long-term.

It could be argued that the processes within the literature were not geared toward innovation or addressing future products and services, and thus could not be entirely applied to the long-term. The approaches highlighted in the literature rely on a degree of certainty and clarity throughout. Therefore it maybe more appropriate to depict the long-term innovation funnel/ process as more complex.

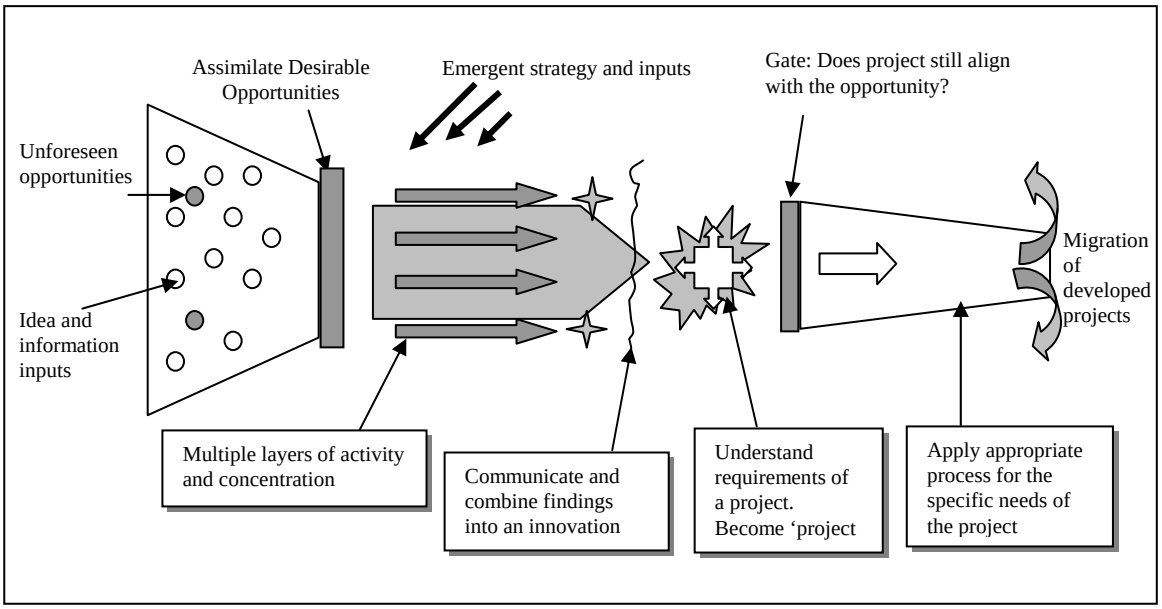

Figure 2: The complex innovation funnel adapted from Wheelwright and Clarke (1992)

7. Designs role

The findings saw design operating on multiple levels, and utilised in different ways within the long-term innovation process. The areas of impact have been characterised as:

Exploratory design: When design contributes to the building of strategy, with both an inward and outward focus

Directional design: Used within the organisation to enable it to respond to specific opportunities

Integrative/specific design: Playing a key role as a communicative and learning tool and also being well placed to act as a linking pin between stages in the process and disciplines involved.

The key seems to be establishing the right mix of informal and formal design tools to enable an organisation to choose the most appropriate methods to suit the task. Building up a portfolio of design methodologies throughout the long-term innovation process will promote interaction and communication at all levels

8. Conclusion

The findings from this research has begun to show that there are a basic set of rules which can be followed in order to maintain some degree of success and can be built upon in order to cater for an organisations specific needs. These basic activities can form a 'long-range' funnel in which projects can be guided through and adapted from. Formal practices based around financial and economic factors are not the total solution. Structures should be flexible, as a more complex environment will demand more exploratory and experimental learning and development. It is essential to be proactive in developing systems and tools, which can directly, address the emergence of new opportunities for the organisation. By creating a framework within the organisation opportunities can be spotted earlier and taken advantage of.

There are a number of tools available for developing a direction. Those tools used will depend on the drive of the organisation. A blend of both quantitative and qualitative methodologies may be beneficial in spotting correlation's between trends and developments.

Although the processes and techniques should be focused on the individual needs of the business, it is important not to have a blinkered view when generating products and services for the future as uncertainties may arise. Such changes may alter the course of the strategy and present more viable opportunities. Therefore the framework that is in place will have to be increasingly flexible drawing from a pool activities which can be selected once the project requirements are understood and incorporating both a technological and user perspective.

The study began to show that there are a series of practical activities that several companies described as being helpful when planning for this long-term view. These common themes will be discussed under the following six headings: Discover and Align, Enable and Facilitate, Create, Feasibility, Synthesis, Communicate and Learning. All activities are characterised by flexibility with the most benefit being derived from more exploratory and experimental learning and development.

References

British Standards 7000 Part 1 Guide to Innovation Management. 1999

Cooper R. Winning at New Products. Addison Wesley. 1993

Haragadon A. and Sutton R. Building an Innovation Factory. Harvard Business Review. May June 2000.

Hollins B. & Hollins G. Over the Horizon. Planning Products Today For Success Tomorrow. Wiley Chichester.1999

Samperi J. Finding Tomorrow Today. MA Dissertation. Brunel University. August 2001

Topalian A. and Hollins W. An Innovative Approach to Developing The New British Standard on Innovation Management. Conf. Quantum Leap. Managing New Product Innovation. Univ. of Central England. September 1998.

Wheelwright,S, Clark, K, Revolutionising Product Development, The Free Press, 1992

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