



Coloplast

January 2004

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Managing innovation within Coloplast

A case study developed by John Bessant¹, David Francis² and John Thesmer³

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The authors would like to express their thanks to the staff of Coloplast A/S and especially the members of the Ostomy Division who participated in the 'innovation audit' process. We believe this offers an example of good and developing management practice in the field of innovation and that it will serve as a focus for discussion of this theme within the classroom. However it is important to stress that the analysis and views expressed here are those of the authors and do not necessarily reflect those of the company.

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Introduction

'We can't afford to be complacent – we have to learn to innovate in new directions!' The mood at the company's 2002 Innovator's Conference was positive but concerned. 200 people from all round the globe had gathered in Copenhagen to exchange ideas, show off their exciting new development projects and above all get 'off-line' for a couple of days to think about how to make innovation really work for the business.

Not that Coloplast is exactly a slouch when it comes to innovation. One of the stars of Danish industry, it has built a highly profitable position as an increasingly global player in the medical products field within a comparatively short space of time. Founded in 1957 the company has grown through a series of innovations which combined a deep understanding of a specialist medical field with strong and focused technical competencies. Innovation is seen as a core value and expressed and embedded within their strategy. (See exhibit 1). Their efforts at innovation have been regularly recognised and they have picked up an enviable set of awards over the years; most recently the daily newspaper Berlingske Tidende, Nordea A/S and the national Patent and Trademark Committee together awarded Coloplast the 2002 Innovation Prize.

Exhibit 1: Company mission statement

Throughout the world we wish, within our selected business areas, to be the preferred source of medical devices and associated services, contributing to a better quality of life. By being close to customers we fulfill their needs with innovative, high quality solutions. Through empathy, responsiveness and dependability we seek to earn their loyalty. Our culture attracts and nourishes individuals who are energetic, committed and have a passion for our business. We respect differences and pledge to act responsibly in social, environmental and business contexts. By striving to be best in our business we achieve growth and increased value for our customers, employees and shareholders.

Innovation has always been at the heart of their business, ever since the company was founded to produce better solutions to meet the needs of patients recovering from stomach cancer. So why the concern now, just when they seemed to have the innovation challenge under control?

Precisely because the company was aware how much its previous success had been built on innovation, it recognized the need to audit and develop its capabilities to continue to do so. In particular the challenge was not only to maintain innovation within key areas with which it was familiar – product and process innovation around 'doing what we do but better' – but also to develop the capacity to create and manage discontinuous, 'do different' kinds of innovation. And for this it realized it would need to build a complementary but different set of capabilities for organizing and managing innovation.

Brief history of the company

Coloplast was founded in 1954 when nurse Elise Sorensen developed the first self-adhering ostomy bag as a way of helping her sister, a stomach cancer patient. She took her idea to a various plastics manufacturers, but none showed interest at first. Eventually one, Aage Louis-Hansen discussed the concept with his wife, a nurse, who saw the potential of such a device and persuaded her husband to give the ostomy bag a chance. Hansen's company, Dansk Plastic Emballage, produced the world's first disposable ostomy bag in 1955; these first bags were made by hand. Two years later Dansk Coloplast was founded. Sales exceeded expectations and in 1957, after having taken out a patent for the bag in several countries, the Coloplast company was established. It was listed on the Danish Stock Exchange in 1983.

Expansion of the business took place not simply in volume terms but also geographically, with a gradual extension of operations across Europe, into the USA and later the Far East. Today the company has subsidiaries in 20 and factories in 5 countries around the world. The product range also developed with the setting up of specialist

divisions dealing with incontinence care, wound care, skin care, mastectomy care, consumer products (specialist clothing etc.) as well as the original ostomy care division. Growing collaboration with other medical firms like Johnson and Johnson has involved them in various mergers, joint ventures and other activities aimed at providing a focused range of care products.

Today Coloplast defines itself as *'a medical device company developing, marketing and selling products and services within our business areas: ostomy, continence care, wound care, breast care and skin care. Our customers are care providers and healthcare advisors, dealers and the product users. We offer products based on innovation and high technology ensuring effective treatment'*.

Financial performance

Growth within the business has been consistent and the company remains one of the star performers in Danish industry, as exhibit 3 indicates.

Exhibit 3: Financial performance for Coloplast Group

Year	1997/8	1998/9	1999/00	2000/01	2001/02
Net turnover (million Danish kroner)	2724	3065	3603	4069	5624
Operating profit	438	464	564	696	931
Annual growth (%)	14	13	18	33	38

Market performance

Coloplast is operating in a niche market with few, large suppliers. In the western hemisphere most of their products are reimbursed by the healthcare authorities. Usually it is a nurse who chooses the product or provides guidance on product choice.

With more than 6,000 employees in 30 countries around the world they are a major supplier of medical devices and services improving the quality of life of the users. Most of the group turnover (over 98%) is generated in countries outside Denmark, with around 79% in Europe and 15% in North and South America. In Europe they are market leaders within their largest business area, ostomy. The overall world market for ostomy products is estimated at DKK 8bn, with an annual growth in the order of 4-8%. The market growth is just under 5% in Europe, but somewhat higher in the USA and the rest of the world. In 2002/03 Coloplast's ostomy product sales totaled DKK 2.131bn, corresponding to a rate of growth of 14% in local currencies.

Key competencies

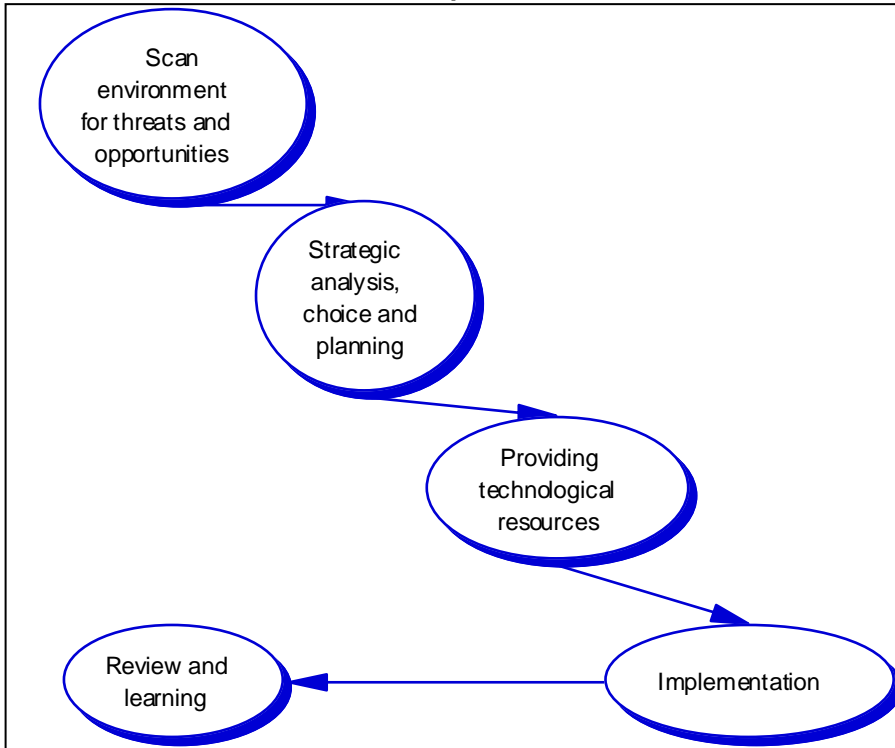
An ostomy bag or a wound dressing must adhere to the skin without causing unnecessary damage or irritation. Coloplast's key technological competence is skin-friendly adhesives based on advanced adhesives technology, which they use in most of their products.

Underpinning all of this has been a strong commitment to R&D with a central facility in Denmark and subsidiary work elsewhere together with extensive links with and funding of university and clinic based work.

The innovation challenge

At its heart the innovation management problem is simple. In order to survive an organization has to change its offering and how it creates and delivers that - and it must do so on a continuing basis. And in order to carry this out it has to go through certain common phases of activity (exhibit 4).

Exhibit 4: Outline of the innovation process



These stages are:

- scan and search their environments (internal and external) to pick up and process signals about potential innovation. These could be needs of various kinds, or opportunities arising from research activities somewhere, or pressures to conform to legislation, or the behaviour of competitors - but they represent the bundle of stimuli to which the organisation must respond
- strategically select from this set of potential triggers for innovation those things which the organisation will commit resources to doing. Even the best-resourced organisation can't do everything, so the challenge lies in selecting those things which offer the best chance of developing a competitive edge.
- having chosen an option, organisations need to resource it - providing (either by creating through R&D or acquiring through technology transfer) the resources to exploit it This might be a simple matter of buying off-the-shelf, or exploiting the results of research already carried out - or it might require extensive search to find the right resources. It is also not just about embodied knowledge, but about the surrounding bundle of knowledge - often in tacit form- which is needed to make the technology work.
- finally organisations have to implement the innovation, growing it from an idea through various stages of development to final launch - as a new product or service in the external market place or a new process or method within the organisation.
- a fifth - optional - phase is to reflect upon the previous phases and review experience of success and failure - in order to learn about how manage the process better, and to capture relevant knowledge from the experience.

Organizing for innovation within Coloplast

How did Coloplast organize to deal with this? In essence they learned and built capability along the lines indicated above – and in particular developed some highly specific patterns of behaviour (routines) which they used to competitive advantage.

For example, one of the key lessons about successful innovation is the need to get close to the customer. At the limit (and as Eric Von Hippel and other innovation scholars have noted⁴), the user can become a key part of the innovation process, feeding in ideas and improvements to help define and shape the innovation. In the case of Coloplast this pattern had been established from the outset when Elise developed a prototype bag and then found someone who could make it and gradually improve on it. Keeping close to users in a field like personal medical devices is crucial and Coloplast developed a novel way of building such insights in by making use of panels of users, specialist nurses and other healthcare professionals located in different countries. This had the advantage of getting an informed perspective from those involved in post-operative care and treatment but also able to articulate needs which might for the individual patient be difficult or embarrassing to express. By setting up panels in different countries the varying cultural attitudes and concerns could also be built into product design and development. Exhibit 5 describes the operation of the Coloplast Ostomy Forum (COF boards) in a little more detail and provides a good example of how the firm got closer to its market. It makes use of similar forums in its other business areas.

Exhibit 5: Coloplast Ostomy Forum (COF)

The concept for this approach to deepening understanding of user needs emerged in the early 1990s. It is essentially a series of product development activities carried out with a small group (10-15 people) of key professionals experienced in post-operative care of ostomy patients. From an initial 5 COF Boards in Denmark, UK, Holland, France and Spain the concept now has 24 boards in 17 countries, involving around 350 Stoma Care Nurses. Each Board meets twice/year with a 1-2 day formal agenda set by the company but designed to promote extensive interaction and experience sharing.

The core objective within COF Boards is to try and create a sense of partnership with key players, either as key customers or key influencers. Selection is based on an assessment of their technical experience and competence but also on the degree to which they will act as opinion leaders and gatekeepers – for example by influencing colleagues, authorities, hospitals and patients. They are also a key link in the clinical trials process. Over the years Coloplast has become quite skilled in identifying relevant people who would be good COF board members – for example, by tracking people who author clinical articles or who have a wide range of experience across different operation types. Members of a COF Board are asked to sign a confidentiality agreement.

COF and product innovation

These people are expert in patient care and articulating user needs and their specific role is particularly to help with two elements in innovation:

- ***Identify, discuss and prioritize user needs***
- ***Evaluate product development projects from idea generation right through to international marketing.***

⁴ For more detail on relevant research and theory on innovation, see Tidd, J., Bessant, J. and Pavitt, K., (2001), 'Managing innovation', John Wiley and Sons, Chichester.

Importantly COF Boards are seen as integrated with the main AIM product development process and the views expressed by Board members provide valuable market and technical information into the stage gate decision process. This input is mainly associated with early stages around Concept formulation (where the input is helpful in testing and refining perceptions about real user needs and fit with new concepts). There is also significant involvement around Product Development where involvement is concerned with evaluating and responding to prototypes, suggesting detailed design improvements, design for usability, etc.

This can be a source of increased satisfaction for the nurses involved; for example Marce Centellas works as a specialist nurse in the stoma clinic of Hospital San Joan de 4 in Martorell near Barcelona, Spain. She comments; ' Working with product improvements is another aspect of my job which is very rewarding, especially if suggested improvements materialise like they did with the Alterna ideal bag'

Continuous development of the COF boards as an input to the innovation process

The role of the Boards continues to change, reflecting the shifting social and political circumstances. For example, in the UK recent reforms of the National Health Service have had a profound effect and have brought a different perspective on service quality and cost control. Business principles have been introduced with the split of the health service into purchasers and providers, where hospitals sell services to the general practitioners. The change that was generated had a significant effect on the hospital stoma care centres. For many stoma care nurses, in addition to patient care, budgeting, planning, stock control, reporting, and promoting the service became part of their daily responsibilities. Coloplast became aware at an early stage that many stoma care centres would need special support for these new skills. Marketing Services Manager Jim Attree conceived the idea of forming partnerships with key stoma care centres based on a package of special services.

It was obvious that most stoma care centres would benefit greatly from a computer program which was tailor made to their administrative needs. Therefore Coloplast's marketing service and computer departments started developing such a programme in consultation with stoma care nurses. 'It took us two years to develop the Practice Management System. Since then we have offered the programme and service package to key stoma care centres as part of a working partnership approach'.

In many cases stoma care nurses did not have access to the necessary hardware to run the Practice Management System, so the Coloplast offer included a lap top computer and printer. In addition there is a complete service package including on going training and development. Technical support is given by computer specialists who are on hand to solve problems by phone or through personal visits.

The system enables stoma care nurses to generate patient records and reports, process data, undertake audits, and develop better communication with general practitioners and other professionals. This means that less time is spent on administration and more on developing the service for the benefit of patients.

To support key customers in a rapidly changing environment, Coloplast has developed, in cooperation with the University of Greenwich, a course on business planning for specialist nurses. The course is fully accredited as a module within nursing and business management degree programmes.

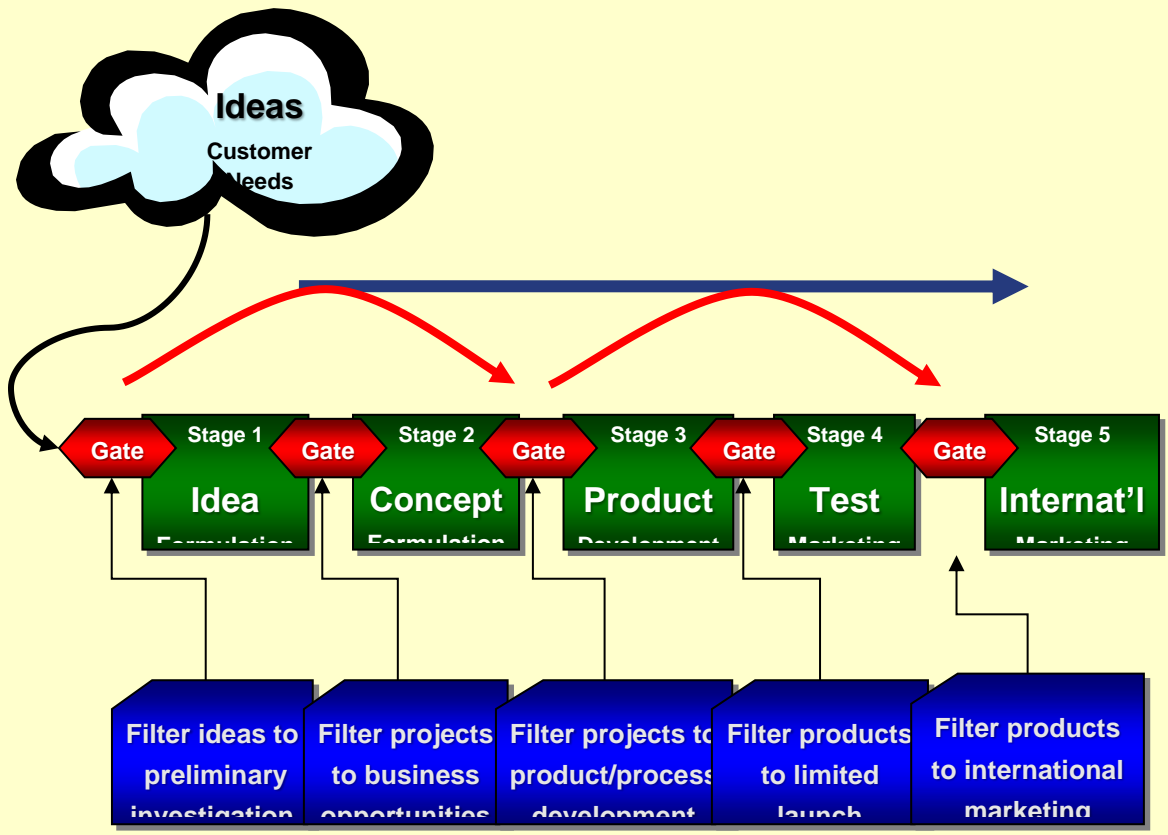
The AIM process for progressing ideas into products

Another area which represents good practice in innovation management is the use of some form of organized and accepted process for managing risk and progressing projects from initial selection through to strategic commitment

of resources.⁵ Such portfolio management/stage gate models are essential in organisations with multiple product and process innovation projects. In the case of Coloplast the process developed was called AIM and provided a clear and widely accepted framework to take ideas and progress them through to successful products launched in the marketplace. Exhibit 6 gives more details of AIM.

Exhibit 6: The AIM process

The basic structure of the AIM process is given in the diagram below:



AIM's purpose can be expressed as being:

- To provide common rules of the game for product development within Coloplast
- To make clear decisions at the right moment

⁵ For more details on this aspect of innovation management see Bessant, J. and Francis, D., (1997), 'Implementing the new product development process', Technovation, 17, (4), 184-197.

- **To clarify responsibility**

The objective of the AIM process is to ensure a high, uniform level of professionalism in product development yielding high quality products.

It is based on the view that Coloplast must increase the success rate and reduce the development time for new products in order to become a "world class innovator".

The stage/gate system

Much of the work in product development is carried out by project teams consisting of selected specialists from marketing (from both product divisions and subsidiaries), R & D, clinical affairs and manufacturing. Each project team will work under the leadership of a skilled and enthusiastic project manager, and the AIM process defines the rules to be followed by the project team.

The AIM process divides the development of new products into five manageable "stages". Each stage contains a number of parallel and coordinated activities designed to refine the definitions of customer needs and to develop technological solutions and capacity for efficient manufacturing.

Each stage is followed by a "gate", a decision point at which the project is reviewed by the "gatekeepers", senior managers with authority to keep worthy projects moving ahead quickly. The gates serve as the critical quality control checkpoints between the stages. A "go" decision is made when the gatekeepers decide that a project is likely, technically and economically, to meet the needs of the customers as well as to comply with Coloplast's high standards for Return On Investment, quality and environmental impact

'Hide-away' – a case study in product development

The deployment of the close links with users and the AIM process can be seen in the following brief case history of a successful innovation. In 1993 the company and its COF boards discussed the needs of a particular patient group (ileostomists) and came up with three proposals for development based on these needs:

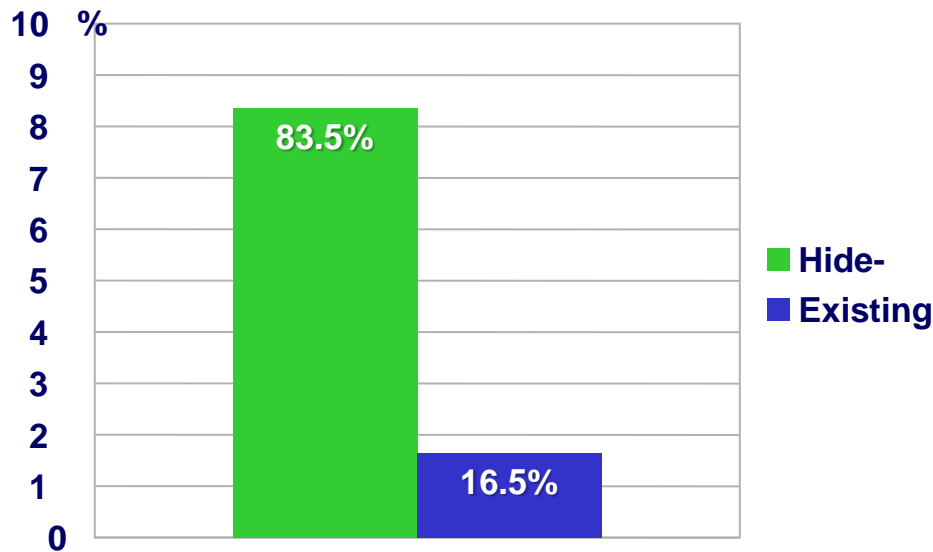
- Open bag with filter
- System for ileostomists with high output
- A bag with a more hygienic, easy to handle and comfortable outlet

Development of filter and high output system were given the highest priorities and after implementing these projects the development of a new outlet was initiated in June 1997. The resulting product has gone on to be a star performer in terms of market share and preference:

"Ostomy. Sales of ostomy products rose 15% in local currencies compared to last year. In Europe, growth was most significant in France and the UK, though all important markets registered progress. The strong demand for the **Hide-away product in particular has driven the growth in sales of the **Assura** product range, which now accounts for more than 75% of the division's sales."**

(Quarterly Financial Statement Press Release, February 2, 2002)

This market position can partly be explained in the results of the Phase 3 clinical trials, from which the strong user preference can be seen. This graph shows the response to the question 'Of the current product or the new (Hideaway) product which do you prefer?'



In summary key features of this successful innovation can be mapped on to the AIM process:

- Clear understanding of user need – essentially for a new outlet which offered features including simplicity, comfort, safety, etc.
- Idea generated by a cross-functional task force involving stoma care nurses and patients with ileostomies.
- Concept: - prototypes developed together with nurses and users
- Development: - throughout the development there was extensive testing in focus groups, User Panels and COF, followed by formal clinical trials in Holland and Germany
- Test Marketing in November 1999 in Holland
- International Marketing - introduced to most subsidiaries since 2000

AIM helped ensure rapid and systematic conversion of the initial idea into a tested and accepted product. Importantly this involved extensive learning and change to the original idea but in a high-involvement fashion linking different internal and external perspectives. Of particular relevance is the close interaction with users and specialists via the COF boards. The timeline and development activities are given below:

<i>Time</i>	<i>Activity</i>
June 1997	<p>Danish Ileostomy board (user panel) meeting At this meeting the board was among other things asked to design their ideal ileostomy bag. A key activity of this meeting with users was to ascertain problems and issues which the new system should take into account and the panel identified several including:</p> <ul style="list-style-type: none"> • The bags are too big for small people • The shape of the bag is wrong (ought to be asymmetric)

	<ul style="list-style-type: none"> • It is difficult to clean the outlet after emptying • The big clamps are uncomfortable • Clips prick
September 1997	<p>Danish ileo board meeting</p> <p>On the basis of the user designed bags from last meeting the board was introduced to three prototypes with different outlets. It was decided to keep on working on prototype C.</p>
November/December 1997	<p>COF meetings</p> <p>At this round of COF meetings the nurses evaluated prototype C. The conclusion from the meetings was that the concept was good and safe, but should be modified because it was too complicated. Further all the adhesive areas were difficult to clean and the bag was too bulky.</p>
January/February 1998	<p>Phase II trial</p> <p>The product from the COF round was tested and the results were the worst ever in Coloplast except for the fact that the outlet was tight.</p>
May/June 1998	<p>COF meetings</p> <p>As the prototype with a brake outlet mechanism received a very bad score in the phase II trial the COF boards were also asked to evaluate a version of the bag without brake.</p> <p>They found that the brake version was difficult to handle and when asked if there was a market need for both versions the answer was no in the majority of the boards. Therefore the brake version was stopped. Further feedback from COF was that the end of the outlet should be provided with more foam in order to control the emptying better, and that the hooks and plate should be larger in order to increase the security. Last but not least the soft front should be reinforced in order to hold the outlet when folded completely up.</p>
November/December 1998	<p>COF meetings</p> <p>In between the above and this COF round the product was modified according to the COF feedback, and prototypes were produced manually for the COF meetings and for the planned phase III trial.</p> <p>At these COF meetings a new version of the bag was presented during the follow up from the last meeting. The boards were also informed about the planned phase III trial in Holland and Germany.</p>
December 1998 - April 1999	<p>Phase III trial</p> <p>Prototype tested with users.</p>
February 1999	<p>Ileo users board meeting</p> <p>At the meeting the criteria for choosing different sizes of bags were discussed in order to verify the need for different designs of the outlets (asymmetric and symmetric).</p>
May/June 1999	<p>COF meeting</p> <p>The interim test results were presented to the boards.</p>
October 1999/March 2000	<p>Planning meeting</p> <p>On October 1st 1999 the 2-pce products were launched in Holland. The 1-piece version products were launched April 1st 2000.</p>

***November/December
1999***

COF meeting

The COF boards were presented to the final test results and thanked for their participation in the project.

Auditing innovation at Coloplast

In 2002 as a follow-on from the Innovator's Conference two university researchers were commissioned to carry out an independent 'innovation audit' of the core Ostomy Division. This was intended to provide a 'snapshot' of current innovation capability but also to indicate areas where further development would be needed to help cope with an uncertain future.

The innovation audit process had four main goals. These were:

1. To 'paint a picture' of the Division's current innovation capability.
2. To identify areas where improvement could be made to strengthen the Division's innovation capability and, consequently, its competitive advantage.
3. To assist in the process of defining the role of innovation as a strategic capability, contributing to the growth plan for the Division.
4. To assist and enable all employees to orientate themselves to the future, when there will be an up scaling of expectations as to their innovation capability.

A team within Coloplast was identified bringing people from other divisions as a mechanism for providing objectivity and also a transfer capability to the wider Coloplast group.

Initial design discussions took place in March 2002 and the audit itself took place during late September/October 2002. The results were presented to a wide audience and fed back to the Strategic Planning Group as an input to their deliberations about next steps for Ostomy Division.

Interviews (either 1 to 1 or focus groups) were held with representatives of 15 major areas within the business and key senior managers.

The basis of the audit was a diagnostic framework developed to understand innovation capability and how this influenced the outcome of the core innovation process. In outline it is presented in exhibit 7. The audit also considered the balance in the innovation portfolio in terms of targets – e.g. product innovation, process innovation, innovation in business models, etc.

Exhibit 7: The Innovation Capability Audit Framework

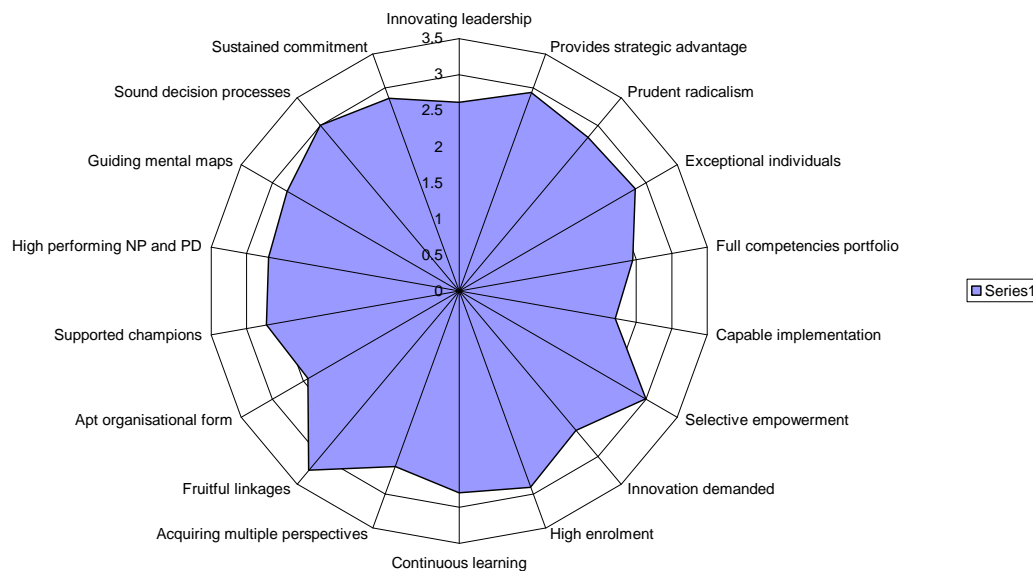
	<i>Potential Strength</i>	<i>In organisations where this is a strength...</i>
Ia	Leaders innovation-friendly	...leaders are authentic and close, biased towards innovation, focus effort towards 'opportunity spaces' and do enrol others.
Ib	Strategic commitment to innovation	... the top team has an external focus and presents a coherent strategy or vision. Their top teamwork is effective; innovation goals are incorporated in business plans innovation goals are delegated down the organisation.
Ic	Willing to be radical	...the top team has a comprehensive analysis of needs for change; they are open to new mind-sets, manage change effectively and are prepared to restructure the organisation's assets.
IIa	High individual talent	... individuals with innovation competencies tend to be recruited, rewarded, developed and given influence. HR have completed an analysis of the need for critical skills and implement proactive HRM policies for recruitment and retention of able people in innovation intensive roles.
IIb	Critical resources available	... the resource requirements for innovation are understood and needed competencies are developed.

IIc	Strong Implementation	... many ideas are well implemented. The management of programmes and tasks is adequate. The organisation gains advantage from innovation.
IIIa	Selective empowerment	...the management style encourages empowerment, personal potential is developed and there is a 'can do' cultural ethos.
IIIb	Innovation demanded	... high expectations regarding staff participation in innovation are set by managers and/or peers, innovation objectives are set, innovation successes are recognised and rewarded and continuous improvement (called 'Kaizen' in Japan) is a living part of the organisation.
IIIc	High engagement	... communication (down-up, up-down and laterally) is effective, staff feel that they are respected and commitment by staff to the organisation is strong.
IVa	Developmental learning	... learning is used to drive innovation, staff competencies are widely developed, staff are trained in team-working and problem-solving, knowledge captured and managed, exploratory dialogue is frequent and experimental initiatives are encouraged.
IVb	Hearing multiple perspectives	... those with the power to commit the organisation's resources listen to (and hear) subject specialists, those who have experience from different perspectives and the views of those who do the core work of the organisation.

IVc	Positive partner relationships	... innovation is promoted by external relationships and close relationships are built and sustained.
Va	Functional organisational form	... the structure of the organisation inhibits innovation, processes and routines do not support innovation, teams (especially adhoc teams) are ineffective and there is little inter-team co-operation.
Vb	Supported champions	... individuals with ideas (champions) are supported, initiative is encouraged and top managers are effective sponsors.
Vc	Strong innovation pipeline	... the 'innovation pipeline' is a set of organisational processes that start with finding ideas and conclude with exploiting the benefits of these ideas. The pipeline is managed and creativity is encouraged.
Vla	Effective philosophies development	... staff members have philosophies, ideologies and schools of thought to guide them. New ways of thinking are sought and developed.
Vlb	Sound decision processes	... the management information system is strong and fast, careful and bold decision-making is present.
Vlc	Sustained commitment	... management never loses interest in innovation; initiatives and impediments to progress are removed.

Key findings of the Innovation Capability Audit

This section is based on the report of the research team to the company offering a critical review of innovation and some suggested directions for building further on what are clearly already strong innovation management foundations.



The average scores for the Ostomy Division for each item vary, but are, in general, below 3. From the interviews and focus groups it became clear that this was in part the result of a heightened awareness of the importance of innovation and recognition that the pace of innovation needs to increase.

Strengths and weaknesses

The Division is perceived of having fruitful linkages with other organisations, people are enrolled in the organisation, that individuals can undertake initiatives themselves, and that innovation gives strategic advantage to the organisation. Also noted as relative strengths are decision making processes used to assess which proposals for innovation are supported or not and, to a slightly lower extent, the commitment of managers to seeing things through.

Relatively lower scoring components relate to the role of top managers in demonstrating by their actions that innovation is important, having the necessary time and resources to follow ideas through, being capable in cross boundary process and programme management, expecting that every employee has a role in innovation, being organised so that innovation takes place effectively and acquiring many different views of what could and should be done.

Four Ps Audit

A second parallel set of questions explored the targeting of innovation in relation to product, process, position and paradigm. It also enquired into 'do better' and 'do different' innovation. Here the data shows that product innovation could be significantly improved but process innovation comparatively is stronger, especially for 'do better' innovation. In general, the data demonstrates that the organisation is more capable in 'do better' rather than 'do different' innovation.

This analysis is likely to have been affected by an awareness that the quantity of value-creating innovation within the Division will need to improve to contribute to the bold development path laid down by the Divisional strategy. However the data suggest that there is significant room to:

- increase the numbers of wellsprings of innovation
- increase the quantity of ideas and proposals,
- improve idea selection methods
- carry innovative ideas through the organisation at a faster rate

Product Innovation

There is a well-understood 'pipeline' for new product development – the AIM process. This begins with mechanisms for discovering, in depth, what patients and their helpers want and need. Some of the sensing techniques are innovative and those designing sensing methodologies need to be commended. The researchers did not find areas of neglect in sensing what patients want and need, although there were suggestions that most data was acquired from existing sources that were tapped regularly. It may be that there are 'hidden' patients or patients with specific needs that are not yet fully understood. Moreover, most sensing techniques gathered data on European patients, and more attention needs to be invested in understanding non-European needs. In general, patients were divided rather simply in market categories and it is probable that more advanced market segmentation would yield a deeper raft of data that could illuminate the product development process.

It would seem that there are plenty of ideas within the Division for product improvement, indeed for significant changes in product functionality. However, it was universally stated that there were insufficient resources available to take almost all ideas beyond the creative stage and explore their feasibility in depth. What has happened is that ideas are discussed and a limited number of officers in the Division who have power make decisions decide which ones should be supported. This informal decision-making method has the merit that it selects a limited number of ideas for development, but the disadvantage that the process is, inherently, 'political'. The people who take decisions (those who have sufficient flexibility of resource allocation) are people whose temperament and experience may be 'within the box' – accordingly decisions tend to be taken which are 'do better', rather than 'do different'.

Once ideas enter the structured product development process (AIM) they have a path and trajectory. In general, the AIM process is regarded as positive, although it was noted that once an idea enters AIM, it is unlikely to fail. Accordingly, there is a domain of ideas which are possible but insufficiently structured or excessively 'out of the box' to be pursued. It is in exploiting these more radical ideas that some of the potential growth of the organisation must lie.

The AIM product development process is widely regarded as positive for the organisation. However, it is capable of further development. This could take three forms. Firstly, it would be beneficial to be explicit about the underlying values that determine how AIM works. Currently, these are not widely understood. Secondly, the routines that are used to manage the AIM process could be improved. This would incorporate a greater capacity for failure and more flexibility of the stage-gate method. As with all systems, advantages can become dysfunctional if carried to excess. AIM provides a structure, but the structure could so condition the organisation that it limits activities that do not sit easily within its structure. Product innovation should not be confined to an inflexible AIM process.

Process Innovation

As mentioned above, a source of innovation within the Division has been the imagination and engineering excellence of those who develop machines and production systems (many of which are customised or unique) manufacturing the products offered by the Division. Although this study did not look in detail at the innovation prowess of the manufacturing function, it is likely that this would yield considerable benefits. A high degree of insight, creativity and agility is necessary in manufacturing, especially on engineering design. There were comments that limitations posed by the production system were, in fact, strong boundaries on the capacity to innovate. In effect, it was felt that Production was saying, 'if we can't make it with our existing machines, then we shouldn't do it'. Although this is a caricature, it is a perceived boundary on product innovation.

An important theme in this section was the importance of cross-boundary process management, learning, knowledge-sharing and knowledge creation. This is especially important for process innovation as processes frequently cross-organisational boundaries and have systemic consequences. In general, informal relationships are positive within the Division but more could be done to strengthen cross-boundary working.

Positional Innovation

From a marketing or positional perspective, it is clear that much effort is invested in selling products to hospitals, specialised nurses etc. However, the lack of a sophisticated market-segmentation model and the existing business

model for corporate parenting (combined with limited marketing, merchandising and sales materials) means that the marketing and selling task is largely devolved to the selling agencies⁶. Whilst this has advantages, it may be that in a globalised company, there is a need for much greater sharing and greater professionalism in this area⁷.

Innovation in Paradigm

One of the targets of innovation mentioned above relates to 'innovation in paradigm'. This refers to the underlying principles of how the organisation is constructed and how it functions – in effect, its business system. Currently, although some people use the rhetoric that the Division is European, in fact, it seems to be a Danish company that has a widespread distribution chain across Europe. The style of corporate parenting currently adopted is a hybrid between high control and strong autonomy in different geographies. In effect, this is similar to the approach used in the Middle Ages where there were strong 'Barons' in outlying areas. As the Division becomes global, this business system will come under more stress, things will be done twice or they won't be done at all. Standards will differ from country to country and there will be a fragmentation of effort. Whilst it is important for local organisations to respond locally, the development of appropriate relationships, agreed policies and practices, especially in relation to innovation issues, would be a significant advance. It is likely that the models for corporate parenting would undergo a series of evolutionary and revolutionary stages, as the organisation moves towards its growth targets.

Additionally, the value-creating mission of the organisation may benefit from 'reframing' - for example, the phrase 'ostomists' rather than 'ostomies' helps to move the focus from bags and filters to the people and their lifestyles around the illnesses and treatments they have had. It is helpful to ask, 'is there scope for looking at radical alternative frames - for example, restoring dignity and quality of life'.

Knowledge Management for Innovation

In innovative organisations, ideas are developed through discussions at the confluence of multiple perspectives, skills, information and knowledge. This means that many open and exploratory debates must be held⁸ – innovative work is creative and intellectual. In the Division there are informal networks, or 'communities of practice'. However, some areas of knowledge sharing are stronger than others. Comparatively, there are few cross-divisional networks and the level of connection with international subsidiaries is patchy. It would be valuable to explore the knowledge management requirements of the organisation from an innovation perspective. This should not lead to a complex IT based solution – rather the setting up of relatively few but powerful knowledge management arenas, linked to the strategic thrusts of the business.

It is clear from informants' comments that many efforts have been made to professionalise management processes in recent years. This has led to much greater visibility of targets, processes and the like. However, in addition, there is a degree of increasing bureaucratisation. Comments made by informants suggest that increasing emphasis is being placed upon developing a lengthy formal rationale for resource commitment. Whilst in principle, this can be a strong feature as it leads to increased control; excessive bureaucratisation is an impediment to innovation since it serves to condition the organisation within a set of written and unwritten rules. A 'bureaucracy simplification programme' would yield benefits and create additional slack.

Innovation thrives at points where different forms of knowledge conflict and confront each other so that a new synthesis can be created. An interesting challenge for the Division is to determine whether it is necessary and desirable to move from a position in which they use existing sciences and technologies to a position in which they are original contributors to the development of relevant sciences and technologies. This move into deeper structures of knowledge, especially relevant sciences, could be a costly endeavour. However, there are indications

⁶ An informant commented on relationships with subsidiaries, "there is no typical relationship... Some of them won't use our promotional material... they are very autonomous".

⁷ CENTRIM's research with companies like Sun Microsystems and Glaxo SmithKline suggests that new organisational paradigms are needed for global enterprises.

⁸ One informant stated, "We don't discuss innovation a lot. We spend time on scheduling. There is not the time for creativity. We work to a schedule... it's focus, focus, focus".

that the limitations of the organisation in respect to innovation flow, in part, from a lack of capability in the basic sciences of materials, adhesives and the like. Accordingly, competitive advantage could be provided by a deeper engagement with core sciences, either directly within the Division or indirectly through forms of partnering with universities etc.

A sense of the views held by people can be gained from the following quotes from interviews:

- *'... we don't know who to go to in other divisions - we have this database but I don't think many people use it'*
- *'over-reliance on personal networks - if you don't have them who do you go to?'*
- *'Annual Innovator's Conference seen as an important step but needs more of this kind of thing'*
- *'even at the conference people tend to mingle with the people they already know'*
- *'... if you don't work together on a weekly or a monthly basis it will take years to build up a personal network - what about the newcomers?'*
- *'linkages could be improved - e.g. earlier production involvement'*
- *'... in the past Development has been quite isolated from Production ... Production had to take what they came with .. but now we go back and ask some question marks about it, and it looks like we can make it more Production-friendly...'*
- *'...in Coloplast the knowledge strategy is that every department does it by their own, invent it by their own!'*
- *'...we're trying to set up some new systems ...but we're only about 70% of the way there'.*
- *'it's important that we move people - it's a demand that they don't stay in the same place'.*
- *'the best way to bury something is to put it on the database!'*

Performance Management for Innovation

One of the simplest and most effective ways to stimulate innovation within an organisation is to make it an explicit element in people's jobs and ensure that there is visibility of innovation performance through a system of metrics. To some extent this is already done within the performance management system, however it is not a strong feature. The performance, reward and recognition systems needs to be developed so that innovation performance becomes a higher priority, within the context of the organisation's strategic requirements for developing innovation in all areas of the organisation.

One of the key attributes of an innovative organisation is that employees that drive innovation, even though some of their initiatives may be unsuccessful, are acknowledged as key members of the organisational community. This 'honouring' signals the vital role that innovation has within the concern – it then becomes an element of a culture, a key attribute of the organisation's mythology.

In the Division at present, there is insufficient recognition of the role of the individual as an innovation sponsor or champion. Innovation has, to some extent, become procedural. It is important for top managers to take a leading role as sponsors, or patrons, giving support for champions for innovative initiatives. Although this is not absent, it could be strengthened.

Specific Blockages to Innovation

Every organisation has (to some extent) specific 'blockages' that inhibit innovation. We have identified six that may be significant. Specific 'unblocking' programmes can be devised in each case.

- *Potential Blockage One - Conservative Mythology*

All organisations are, to some extent, 'children' of their past. This is true within the Division. Within living memory, there have been significant failures of innovative products. This seems to have created a psychological no-go area that precludes certain forms of radical innovation from being discussed. Whilst there are merits to this inherent conservatism, it acts as an impediment to innovation, especially of the 'do different' type.

- *Potential Blockage Two - Low Skills*

The specific skills needed in an innovative organisation could be understood better in the Division. Innovation is a process, at least in part. The organisation needs to be capable of both facilitating creative brainstorming exploratory thinking and managing a rigorous and structured implementation programme, ensuring that the organisation can incorporate new ideas in a fast, flexible and agile fashion. The term used to describe this organisational capability is 'ambidextrous'.

Although, as stated, the Division has an honourable history of engagement in innovation, there are few examples where more advanced innovation management tools are being used. Training employees in the specific methods for managing innovation would be beneficial and the role of education and training becomes more significant for 'intellectual path finding'. In non-innovative organisations, it is possible to be dedicated to bringing individuals to a predefined level of skill. This is not true in innovative concerns, where innovation is facilitated by appropriate attitudes, deeply embedded innovation-specific skills, and using learning as a method for path finding for the organisation. In a sense, this requires more of an educational rather than training-orientated approach.

Something resembling an 'Ostomy University' might be a suitable conduit for this innovation-specific learning to take place. Courses could be offered, perhaps in association with an international university, in all of the key areas: including medical products, materials, globalising business models, corporate parenting etc.

- *Potential Blockage Three - Lack of Systemic Agility*

There is an emphasis on doing things well currently but there are indications of an inherent lack of agility in organisational processes⁹. If this is correct then it acts as a barrier to certain forms of innovation, since the cost of, and time taken, to implement innovations is protracted. Innovative organisations need to be systemically agile. Again a flavour of the views around this theme can be gained from these quotes:

- *'...AIM is successful but slow!'*
- *'...the machine (AIM) in itself is very good at optimising..there is a motivation to do even better...'*
- *'sometimes it is a too heavy process - because you have ideas they stop on the way because you have to fill in all these forms - so it kills initiative and maybe innovation from time to time'*

- *Potential Blockage Four – Unclear Values Towards Innovation*

At the top management level, within the Division and the Group, there is an interesting debate to be had. Some senior managers see conservatism as a distinct strength. They argue that the care and consideration given to decisions provides formula for success. Other senior managers are biased towards innovation, certainly in the rhetoric that they use. It could be that mixed messages are coming from senior management. These could be clarified.

- *Potential Blockage Five - Fixed Staffing*

It is well known that some people are significantly more innovative than others. In an organisation, like the Ostomy Division, many people stay for much of their career. This provides deep embedded knowledge but can inhibit or prevent new people from joining who bring different energies and perspectives. It would be desirable to find ways of introducing, perhaps on a secondment basis, more and different types of people.

- *Potential Blockage Six - Insufficient Horizontal Management*

As stated above, the product development process in particular requires a high degree of horizontal management. Such processes need to be understood, and improved systemically. Whilst there is evidence of innovative work

⁹ Several informants spoke of unduly long cycle times for innovation processes.

being undertaken to clarify and improve horizontal processes, it is likely that this work will need to be extended and deepened - especially as the scope and scale of the Division's activities are expanded. Perhaps more significantly, changes in process will need to be undertaken as global facilities come on stream (for example, there is little visibility in the Danish head office as to the current programmes of product innovation being undertaken within the subsidiary in China).

Making innovation happen – building innovative *routines*

Organisations develop particular ways of managing innovation through learning processes in which they try different behaviours and find 'what works for us'. Successful behaviours are repeated - eventually the pattern becomes a 'routine' – 'the way we do things around here'. Routines are supported and embedded in structures and procedures that give them form.

Routines can be powerful source of competitive advantage because they have to be learned – other firms cannot simply copy them. (The COF Boards and the overall key player approach is a good example that works to Coloplast's advantage). But firms need to review their existing routines to make sure they are appropriate – sometimes the very things that were important for one set of conditions (such as supporting 'do better' innovation) become a major barrier to doing something new or different.

The 'do different' challenge

In general Coloplast Ostomy Division scored well on innovation but with some areas of concern. Particularly there was a sense that the organization wasn't well set to deal with the challenge of 'do different' innovation – as indicated by some quotes:

- *'...you will end up with frustration - people get all these good ideas but there's nowhere to take them ...'*
- *'on some things we're starting to be very good... but because it's so structured there's no real room for radical ideas'*
- *'...the machine (AIM) for optimising works well but not for radical new products or market redefinition...'*
- *'I don't think we have the DD side well covered today... we have one project which might... but the pipeline is 4-5 years from now'*
- *'I think we do too little for the radical side - but Coloplast is too busy...'*
- *'we like to think we're the best in the world but we're not!'*
- *'after you've banged the wall 4 or 5 times you give up!'*
- *'...sometimes what you need is radical, out of the box - you need a separate kind of structure for that because it can't fit the optimising one...'*
- *'...(needs a structure) well-protected from the planning process, budgets, the normal resource drain, so to speak!'*
- *'...if we don't get outside the box, then somebody outside the box will step in and do it .. that will ruin our business in the long term.'*
- *'because it's all focused on this well-oiled machine there are no resources for the radical ideas...'*
- *'...there should be a forum where it's allowed to have new ideas and it should be supported where there is money to run with these good new ideas..'*
- *'this is the resource we put into that (radical front end) because we want it... we must protect this, though, and not cut back when things get difficult or allow it to be taken away...'*
- *'need to allocate significant target resource and build up to it - not just a few %'*
- *'... if you just have the task to say 'new machine this year, new machine next year, etc.' you'll never be innovative, because you're ordinary tasks will fill up your whole programme...'*
- *'we should allow people to go to conferences and exhibitions without having a specific target - just to see what's around'*
- *'people aren't taken enough out of their daily work to think differently'*
- *'... most of the time we are too focused on a particular problem...'*
- *'... you have to change the attitude, send people out on a more loose basis...'*

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- *'the risk of taking only one risk and that's it!'*
 - *'...we need a 'safe haven' for ideas... but there have to be checkpoints - if anything interesting comes up then we put it into the (AIM) machine.'*
 - *'it's (DD) not integrated in the AIM procedure'*
 - *'...if it's interesting then you can take it into the 'real world' - budgets, plans, etc. - but when it lives there it has its own life'*
 - *'AIM too constraining'*
 - *'because it is so structured there's no real room for radical ideas, no 'let's try this', no way to run with it outside the structures'*
 - *'...failure is not an option! (in AIM)...'*
 - *'Today's DD needs to become tomorrow's DB innovation!'*
 - *'...the new ideas, the organizational framework has to be fitted to the size of them.'*

'Do Different'

The opportunity to engage in 'do different' innovation is limited within any organisation. There are four major reasons for this:

- 'Do different' innovation is frequently risk laden;
- It is unclear how competitive advantage can be gained from the new endeavour;
- Organisations codify activities around an existing business model and are ill-equipped to create something dramatically new;
- New activities often require knowledge and other assets that are not possessed.

These factors are, in different ways, impeding the development of 'do different innovation' within the Division. The process is also limited by the conservative nature of the industry within which the Division operates and the raft of regulatory bodies that define its functioning. It is unlikely, within the existing growth targets and with the current resource availability that the Division has the capability to embark upon programmes that lead to radically different products or services. Accordingly, some form of 'special' organisational arrangements need to be constructed so that a proportion of resources are allocated to 'out of the box' innovative initiatives. It needs to be accepted that some, if not most, of these will fail. However, a controlled corporate entrepreneurship and venturing programme is likely to yield beneficial results, especially in an industry where advances in medical technology is likely to diminish the need for existing products offered by the Division over time.

Discussion questions

1. Organizational 'routines' like AIM and the COF boards appear to have helped Coloplast succeed in managing the innovation process reliably and in timely fashion – as evidenced by the 'Hideaway' example. How would you assess their innovation capability?

2. The conclusion of the audit was that the organisation needs to change what it does and how it resources those changes. Given the strengths of the existing innovative business and the challenges of 'do different' innovation, what would you recommend? In particular try and link your response to the core questions around the routines and suggest:

- Which should we do more of, or strengthen?
- Which should we do less of, or stop?
- Which new ones do we need to start?