

## Introduction

Everything you use at home, at school, or college has its origins in simple, perhaps ingenious, ideas. However, it takes more than creative thinking to make a good idea work. Good ideas have to be turned into realistic, affordable solutions that people want.

This process is known as innovation. It is a mix of ingenuity and enterprise, and has marked every stage of 3M's 100 year history. Today, 3M continues to drive for original and practical customer-focused solutions, to ensure that 3M maintains its growth and profitability.



## A century of innovation

3M has been in business for 100 years. In 1902, five young entrepreneurs founded the Minnesota Mining and Manufacturing Company. However, the mineral deposit they had planned to mine proved to be useless so they had to 'think again'. They turned to buying in the mineral necessary to manufacture sandpaper, and their ingenuity and enterprise saved the company and laid the foundations for an entrepreneurial spirit that has shaped the company to this present day.

From this shaky start, 3M has maintained a flow of groundbreaking inventions ever since. The company now manufactures and markets more than 50,000 different products for industrial, commercial, health care and consumer markets in more than 200 countries worldwide.

Innovative organisations are able to spot and respond to market opportunities. They identify consumer needs, and then develop appropriate products, eg the Post-it® Note. Product development involves a range of processes, from refining an original design idea to the final delivery of a marketable product.

The innovation story at 3M is one of ingenuity and enterprise;

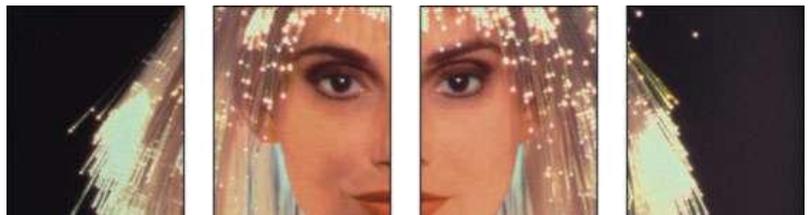
of turning ideas into commercial reality and building a strong, sustainable business.

3M focuses its ingenuity on finding practical solutions to help its customers succeed. Many of its first breakthroughs were created for 3M's business clients in what was then a new motor car industry. Early innovative products included Wetordry™ sandpaper, followed by Scotch® Masking Tape in 1925.

During the 20th century the company went on to build a strong capability in developing technologies, working closely with customers to anticipate and understand their needs. The company's strong culture of innovation enabled it to achieve many breakthroughs, ranging from Scotch® Transparent Tape and the Post-it® Note, to up-to-the-minute fibre optic cables and a new type of pharmaceutical which today is helping fight virus infected cells and tumour cells.

## Managing and developing ideas

How does a company encourage people to look beyond their current goods and services to something better and/or different? The answer lies in the company's culture, ie the typical pattern of relationships and behaviours within an organisation.



For people to be creative they have to have freedom; freedom to explore new ideas within an environment that tolerates mistakes, understands and manages the risks involved.

Product innovation involves prioritisation, trials, failure and risk. The key is to minimise the organisational and financial risk. This relies on effective processes to deliver consistent results by managing innovation.

The challenge is to improve these processes continually without stifling people's creativity, as this would stop the flow of new ideas that are vital to success.

There are many ways to encourage good ideas, from brain storming to reverse thinking. Brainstorming involves asking groups of people to generate ideas, however fanciful, eg for solving a particular practical problem. A complete list of brainstormed ideas can then be analysed to agree what is feasible.

Reverse thinking allows people to broaden their thinking. For example, instead of asking 'How can we get the workers to the material?' Henry Ford turned the problem round. He asked: 'How can we get the work to the people?' With this reversal of a basic assumption, the assembly line was created.

3M has no particularly favourite method of generating ideas, much depends on a manager's style. 3M believes that the most critical thing is to be proactive. Ideas rarely just pop into people's heads; they have to be encouraged and developed.

3M's innovations have not started with one-off discoveries or 'eureka' moments. Its new products result from deliberate, rigorous commitment to the technological development of solutions to customer needs. This customer-focused approach involves finding out what existing and potential customers want through detailed market research. A customer-focused organisation starts with the consumer, and then creates the products that match consumer demand. This contrasts with old-fashioned production companies of the past that thought they knew best. They delivered what they were good at producing, rather than what customers wanted.

At 3M, the generation of new ideas focuses on the customer. For example, the new 3MTM Paint Preparation System (PPS) solved a number of problems in garage body shops where cars are repaired after accidents. Launched in 2000, PPS is a completely new paint system that:

- allows greater efficiency
  - eliminates traditional paint mixing pots and filters
  - is usable at any angle and requires 70% less solvent for cleaning.
- It is revolutionising car repair and has won numerous design and innovation awards.

With innovation, urgency and speed are essential: Competitors may be thinking and working on similar lines.

3M has numerous programmes to ensure that it identifies new products with significant potential and allocates resources to commercialise them faster.



## Commercialising ideas

Commercialisation means taking an idea and then getting a product into the hands of paying customers as quickly as possible. This involves many stages, including:

- **Prioritise ideas**

Each year at 3M, thousands of ingenious ideas and technology applications emerge. It is vital to prioritise these ideas and focus on those with the greatest potential for growth and profitability.

- **Make a prototype**

Typically there will be numerous prototypes, trials and modifications.

- **Manufacture the product**

Consistent quality for customers has to be balanced with costs, profitability and environmental concerns. Organisations like 3M are committed to continuous improvement, using sophisticated tools and techniques to reduce variation and deliver consistent results to ensure value for customers.

- **Market the product**

This involves creating the brand identity and positioning for the product.

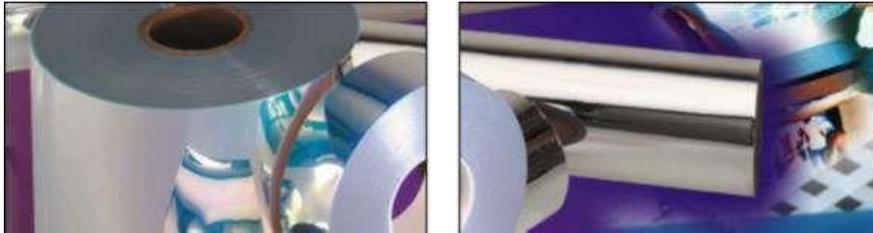


- **Generate sales**

By creating the most effective channel to market. This involves distributing products through those channels that most suit the final consumer, eg placing Post-it® Notes with local stationers, newsagents and supermarkets.

## **Intellectual Property Rights**

Many of 3M's ideas are patented (each year the company applies for more than 500 patents). Once 3M has been granted a patent in a particular country, it has the legal right to prevent other firms from profiting from its ingenuity for a specified period of time. This ensures that 3M can put resources into commercialising the idea without fear of another company copying it.



Patented ideas are sometimes referred to as 'intellectual property'.

3M's intellectual property also includes its trademarks (ie brand names) such as Scotch®, Scotch-Brite™ and Post-it® as well as its corporate brand identity which is a combination of the red 3M logo, as seen on this page, and the style the company uses for its literature and the way it presents its products.

## **Accelerating innovation**

As part of 3M's acceleration programme worldwide, a small focused team, the Enterprise Growth Team, is working in the UK to speed up the process of getting new products to market. The team is multi-disciplinary, involving people with sales, technical, manufacturing, product development and business experience. It is focused on finding new customer-driven applications for existing 3M technologies.

3M has over 30 different technologies, from pharmaceuticals to microreplication (the creation of thousands of tiny shapes on a surface), which have been applied to a wide range of products from high performance abrasives to reflective traffic signs. The task for the Enterprise Growth Team is to identify new applications, or new product ideas, for these technologies.

To date, the Enterprise Growth Team has increased sales from novel products based on new applications using existing 3M film technology. It is now extending its approach. Its success is partly because:

- its sole purpose is to find new ideas to grow sales
- it is focused on stretch targets
- it has no constraints or boundaries
- it works as a small flexible, highly motivated team.

The team's role is to:

- encourage idea-generation. This role is publicised within 3M so the team is seen as a central point for ingenuity/idea capture
- prioritise ideas against standard criteria
- commercialise products within 3 to 6 months, so as to
- deliver targeted sales growth for the UK.

## **Innovative applications: multi-layer films**

3M produces a range of multi-layer films which draw their inspiration from nature, particularly the glittering blue wings of the Morpho butterfly which are created without the use of colour pigment. By combining films in layers similar to those of a Morpho butterfly's wings, 3M has produced multi-layer films which reflect in the same way, whatever the light angle.



3M recognises that it is not the technology itself that is important but its commercial application. To date, applications for these films include LCD displays, so increasing screen brightness, reducing screen glare and providing viewing privacy. The brighter screen means energy efficiency and smaller batteries, enabling smaller equipment. Examples include: screens in laptop computers and personal digital assistants (PDAs) - and extend to fast growing, exciting applications such as the latest coloured mobile phones, car navigation displays and rear-projection televisions.

Working as a focused team in the UK, the Enterprise Growth Team identified two specific new applications for multi-layer films which are delivering strong sales growth:

- 3MTM Thin Sign Technology. By combining three different types of multi-layer film, 3M has created a new display solution, with the advantages of the latest 'edge lit' sign technology at a price more consistent with traditional lower-cost, back-lit alternatives. The new technology also means the illuminated signs use less energy and generate less heat, thus reducing air conditioning costs when used, for example, in stores.
- Decorative applications on luxury goods. The film creates an attractive colour effect, helping to differentiate the product and add value. Uses include CD covers, perfume packaging, Kylie Minogue's tour brochure and latest DVD, greeting cards, and even designer lampshades.

### **Maintaining the momentum**

While short-term success can arise from a one-off product or service, it is often just the entry ticket to a new market. Companies have to be able to repeat that first success, as there are always other firms ready to copy, catch up and overtake.

Innovation is at the heart of how 3M operates. The company has an entrepreneurial culture that encourages people's ingenuity managed by a structured development process.

During its first 100 years, 3M has received many accolades for innovation. The company is now focused on maintaining this momentum in increasingly tough markets to match its success of the last century.

