

dti

SUCCEEDING THROUGH INNOVATION

60 Minute Guide to Innovation

Turning Ideas Into Profit

www.dti.gov.uk/innovation



CBI

THE VOICE OF BUSINESS



Innovation is possible for every company



Innovation is the successful exploitation of new ideas. A basic understanding of the subject is essential for all business leaders whatever their current or intended product or service. Do not confuse innovation with technology. Innovation is the only way to stay ahead of the competition. Exploited properly it will improve business survivability and lead to increased profits.

Throughout my 30 year career of leading successful innovative companies there have been four frequently asked questions:

How do you begin to innovate? Where do you get your ideas from?
How can you fund it? Can you minimise the risks?

This guide is designed for busy people. In 60 minutes it will answer those four questions and many more. The author, John Beacham, is one of the best strategists that I have met in my working lifetime. I recommend this guide to you.

Barry Dodd, Chairman of GSM Group and Regional Development Agency Board Member for Yorkshire Forward. Barry founded his company as a two-person start-up. It is now the largest manufacturer in its sector in Europe.



"The British Chambers of Commerce recognises that successful businesses need creativity and innovation to compete in today's global market. Through it's Accredited Network, it strives to support and encourage all methods of innovation, both for it's members and the wider business community it serves and is only too pleased to support this Guide."

John Dunsmure, Managing Director, British Chambers of Commerce



"Innovation, in all its forms, is an essential business strategy for any up and coming organisation and 'The 60 Minute Guide to Innovation' is a practical and readable guide to help businesses who are considering their growth potential. It is a must and should be high on the reading list for all aspiring company directors."

Miles Templeton, Director General, Institute of Directors



"Innovation is important for SMEs - a massive 60% of innovations come from the small and medium enterprise sector, and it is crucial that this total must not diminish against competing pressures in the modern market. The DTI guide is quick and easy to use, and shows that innovation doesn't necessarily mean "hi-tech". No business should be excluded from innovating - it's change for the better"

Clive Davenport, Trade and Industry Chairman, Federation of Small Businesses



"Innovation is critical for the development of new products and services and improved organisational processes and models, delivering competitive advantages for companies and enhancing standards of living for consumers. The CBI supports this guide because the future success of all UK businesses depends in large part on their capacity to innovate."

Tony McBride, Technology & Innovation Committee, CBI

DISCLAIMER: While every effort has been made to ensure the accuracy of the facts and data contained in this publication, the BCC, IoD, FSB and CBI can accept no responsibility for errors or emissions, or their consequences. The publication is written in general terms only. It is not intended to be a comprehensive statement of the issues raised and should not be relied upon for any specific purposes.

How to Use the Guide

This guide is designed to help businesses who are keen to grow and thrive, in the modern climate of change and growing competition.

It focuses on the key business process of innovation, the successful exploitation of new ideas, and the factors most relevant to this.

It provides practical and readable advice and ideas on how to prepare for it, how to carry it out, the inherent risks and ways to reduce them.

The guide also covers innovation using the vehicle of a new company start-up or spin-out.

This guide is relevant from large companies down to very small ones, and also new ones.

It can be read sequentially or consulted by section as desired.

The “bullet point paragraphs”, the summary boxes and the contents page facilitate quick navigation.

There are useful references to further information.

**“This Guide represents a lifetime’s experience of innovation.
I hope it will motivate and help you to turn ideas into profit.”**

A handwritten signature in blue ink that reads "John Beacham". The signature is written in a cursive style with a long horizontal line extending from the end of the name.

Dr John Beacham, CBE, DSc, FRSC
Author

This publication is available online at www.dti.gov.uk/innovation.

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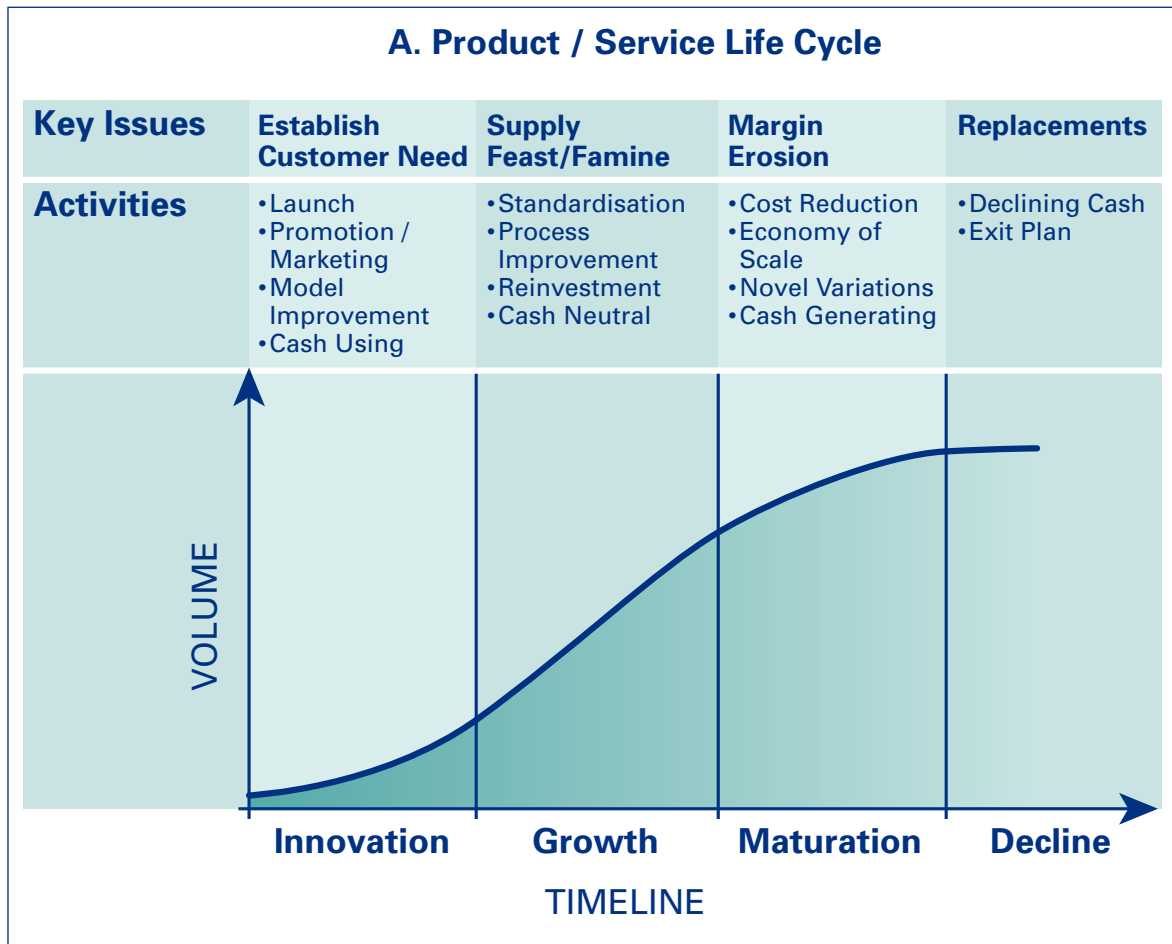
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1. The Business Climate Today

The pace of change continues to increase. What was satisfactory yesterday is either no longer wanted or superseded by something better today.

- Globalisation, competition from developing countries (low labour costs), the easy access to knowledge and the speed of communication, the advance of technology and rapidly changing consumer tastes are driving this change.
- Change brings both danger and opportunity. Changes must be sensed, interpreted and then acted upon. Charles Darwin said “the species that survived were not the most intelligent – they were the most adaptable to change”.
- Every business and every product/service is open to competition and every activity’s value is open to challenge. Potential competitors can come from anywhere in the world and they are no longer easy to recognise. In many UK business sectors, foreign competitors are systematically investing more in R&D, and Innovation
- Although size and global coverage make some companies very powerful, flexibility, innovativeness, and speed to market are still very competitive responses.
- All products and services grow and mature in a manner generally described by an S-shaped Life cycle curve (Diagram A). Their position on this curve dictates a characteristic response (e.g. investment and process improvement in the growth phase, cost reduction, economy of scale and minor novel variations in the mature phase, and an exit strategy and replacement in the decline phase). The time between innovation and maturation is becoming ever shorter.
- New and better quality business is an important safeguard against business decline and failure. Failure is most common at the end of a recession and small businesses are the most susceptible. The main causes are, in order of importance: loss of market, lack of finance, bad debts and management shortcomings.

A. Product / Service Life Cycle



2. A Responsive Business Strategy

A business that is not growing through new product and service introduction is likely to be in decline, as its existing sales portfolio inexorably matures.

- The role of business is to create wealth (added value). This added value is used to reward the stakeholders (employees, providers of capital and government through corporation tax) and then to sustain and develop the business through investment for growth (R&D, capital expenditure and amortisation of acquisition goodwill). Failure to create enough added value will jeopardise growth.

A Guide To Value Added (or Added Value)

Value added (VA) is a simple and good measure of how well a business is doing - defined as:

sales - cost of bought in materials, components and services

VA is easily calculated from Annual Report figures as

operating profit + employee costs + depreciation + amortisation

VA per employee (labour productivity) and VA per employee cost plus depreciation (value adding efficiency) can be used to compare with other similar companies. Companies who consistently have a value adding efficiency below 100%, are generally heading for difficulties. Good strategic choices, operational excellence and wise and balanced investment are the precursors to VA growth, high productivity and good value adding efficiency.

Find out more about VA and compare your company to others in your sector on the Value-Added Scoreboard at www.dti.gov.uk/innovation

- Every business needs strategic purpose and direction, as well as the ability to respond quickly and flexibly to change and maturation. This should be embodied in a business plan that should have at its heart an appropriate mix of improving performance (maintaining and improving margins) and growth (investing in new products and services).
- Michael Porter defines strategy as “a combination of the ends for which the firm is striving and the means by which it is seeking to get there”. Gary Hamel believes that “the only thing that matters about a strategy is how different it is from other strategies”. However a strategy has no value unless it is combined with the commitment of those involved to deliver it.
- Growth can be organic (internal) or by acquisition. Evidence from the market place suggests that as many as two thirds of acquisitions result in loss of value through overpayment, poor integration and loss of focus. The assimilation of a different culture can be a slow and difficult process.

- A good business plan will cover the aims of the business and the strategy for accomplishing them, (Diagram B). It will include the procurement and maintenance of key assets (fixed, people and intellectual capital) and the process for their exploitation, as well as the risks, the necessary investment and its management. Milestones, targets and timings will also be key features of the plan. Above all a good plan will be flexible and responsive to the changes in the external environment.
- The old model for business success of mastery of capital/labour and production is no longer relevant. The new emerging model for today's rapidly changing world involves:

The New Model for Business Success

Understanding	- market/customer needs from customer intimacy
Access	- knowledge/skills and ideas through networking
Innovation	- turning ideas and creativity into successful new business

- Investing in new and better products or services requires innovation "the successful exploitation of new ideas". No idea or innovation is successful until its commercial manifestation is purchased in significant amounts.
- Innovation should not necessarily be confined to products and processes. The most radical innovations for an organisation can often be those of business processes and management. These are innovations that change the way things are done, with the benefits indirectly improving the business. They usually involve applying new principles of management (e.g. outsourcing, collaboration, decentralisation and employee empowerment).
- The evidence shows that innovative businesses deliver above average sales growth and profitability. Many successful businesses operate with targets such as 30% of sales from new product/service introductions made in the last 3-5 years.

B. An Innovative Company Business Plan Template

1. Executive Summary	<ul style="list-style-type: none"> • Simple, clear and memorable
2. The Business	<ul style="list-style-type: none"> • History (where the business has come from) • Organisational structure
3. Strategic Purpose and Direction	<ul style="list-style-type: none"> • Vision and aims
4. Current Offerings	<ul style="list-style-type: none"> • Description of products and services • The markets served and major customers. • The competition • Sales/profit/contribution of each product or service • Performance enhancement plans • Life cycle positions and projections for market growth
5. Capabilities and Strengths	<ul style="list-style-type: none"> • Key suppliers and relationships • Production facilities and technologies (technology platforms) • Market and customer knowledge and intimacy • Competitive technical and other skills
6. Future Offerings	<ul style="list-style-type: none"> • Growth strategy (organic/collaboration/acquisition) • Significant/step change (growth) innovation plan, with timings • Desired new product/service goals (e.g. 30% sales from launches in the last 3 years) • The generation of ideas and management of an innovation pipeline • Priorities
7. Finance	<ul style="list-style-type: none"> • Historical results (Profit/Loss, Balance Sheet and Value Added accounts) • Strategic projections of investment, sales, cash flow and added value • Development milestones • Risk analysis • Sources of finance (internal/external, debt/equity and gearing)
8. Investment	<ul style="list-style-type: none"> • Investor attractiveness and return requirements • Covenants and restrictions • Investor exit strategies • Key players and managers and their retention / incentivisation

3. The Tactics of Innovation

Many companies who want to innovate find that they must first increase their motivation and improve their proficiency.

- Based on surveys of why companies don't regularly innovate, six barriers to product and service innovation have been recognised; three relating to the motivation to innovate, and three to the difficulties of actually doing it. Each of these is addressed in a chapter in this guide.

Motivation:

Failure to recognise change/threats/opportunities (Chapters 1 and 2)

Lack of ambition and vision (Chapter 5)

Risk aversion (Chapter 6)

Proficiency:

Lack of market understanding (Chapter 4)

Lack of expertise in the process (Chapter 3, 5 and 7)

Lack of finance (Chapter 6 and 8)

Proficiency can be fairly easily improved, but motivation, which is the key to innovation, is much harder.

The Six Approaches To Innovation

The choice of approach depends on the business strategic purposes and direction, its capability, its market understanding and the size of the risk investment available. They are, in order of increasing investment:

- | | |
|------------------------------------|--|
| 1. Incremental | - Continuous product and process improvement. |
| 2. New design | - Using design and customisation to add value. |
| 3. New business model | - Embedding the product inside a service |
| 4. Increasing functionality | - e.g. Adding software technology |
| 5. Applying technology | - Fusing different technologies to add value |
| 6. Breakthrough | - Exploiting new technology |

The first three can be loosely categorised as market pull and the latter three as technology push.

- Research and Development (R&D) is often an important part of innovation, and there is a well-established correlation between R&D investment and sales growth, value-adding efficiency and also market value. Involvement in R&D can provide technology, knowledge and expertise, but this can also be obtained from elsewhere. An important pre-requisite is to have the necessary skill to recognise, translate and apply the technology, wherever it comes from.
- “Research is the transformation of money into knowledge, whilst innovation is the transformation of knowledge into money.” Public sector R&D is mostly Research (the creation of explicit knowledge which is published and available to all) whilst private sector R&D is mostly Development (the application of one or more technologies to produce a desired and saleable outcome).
- The ability to create new ideas, to evaluate them and to access and use knowledge and skill to develop them is fundamental to business innovative success. Business networks, whether local, sector or technology based are excellent sources of ideas, knowledge, support and encouragement, and possible collaborators or partners.
- Universities are very good sources or gateways to specific technological knowledge. Most Universities have Technology Transfer, Business Service or Outreach offices staffed to help the interaction with appropriate academic staff. It has been shown that 17% of businesses directly use the university science base, whilst 55% make indirect use.
- A University may be used as a source of tacit knowledge (consultancy), a gateway to leading edge explicit knowledge (consultancy) or a place to generate new required knowledge (collaborative research). The best and most productive interactions are built up over time, with trust and respect for each other’s needs. Other useful and valued interactions that lead to good quality knowledge transfer are placements, recruitment, and licensing or spin-outs of intellectual property.
- Knowledge transfer is mainly a tacit (person to person) process. Tacit knowledge offers potential competitive advantage since it is not normally available to others and is tailored to the interacting parties. It has been shown that three quarters of the most important contributions of academic research to technology development are tacit.

4. The Needs of the Customer

Innovation is often seen as a technical activity, but ultimate success is measured by acceptance in the market place.

- Significant investment is needed to understand potential customer needs, the dynamics of the market, and the possible role of branding and marketing.
- Function (what it does) and form (how it is presented) are the key components of the design of a new product or service. Design can play a very important part in the attractiveness of a new product and its value is often considerably underestimated.
- The design or presentation must also be geared to specifically appeal not only to the user, but also to those (if these are different) who will make the actual purchasing decision and the criteria which they will apply e.g.:

Person making purchasing decision	Criteria
Purchasing Manager	Price and volume
Technical user	Specification and performance
Consumer	Perceived value and emotional response

Designing Consumer Products

The needs of a consumer, can be considered using Maslow's hierarchy of needs, where the most basic needs must be fulfilled before the higher ones come into play:

- | | |
|--------------------------------|--|
| 5. Personal Development | Freedom, knowledge and personalisation |
| 4. Self esteem | Feel good factor |
| 3. Esteem of others | Brand recognition |
| 2. Belonging | Form and acceptance |
| 1. Survival | Function and utility |

In the developed world, whilst function and form remain fundamental, some satisfaction of the higher needs is also now a pre-requisite for success; for example brand recognition (e.g. fashion, designer products etc.), feel good (e.g. entertainment, cosmetics, health, etc.) and personal freedom (e.g. personal transport, high functionality, customisation, service, etc.)

- A good potential new product must have a customer perceived value (price) very significantly in excess of the estimated costs of providing it, since there will inevitably be some unexpected additional costs during the innovation process and later price erosion through competition.
- Customers, or consumers, are seldom able to consciously express their latent needs, although they will usually recognise the solution when shown it. Listening to customers is therefore not sufficient to understand what they might want. Customer and market immersion involves closely observing what they do with current products or services, and creatively identifying what is either missing, not satisfactory or could be improved. From this a potential product/service idea can be envisaged.
- There is considerable evidence that in depth immersion leads to intuition and ideas, which can be turned into the foundations of innovation. It is important to turn any promising idea into a prototype that can be looked at, played with and commented upon by the customer, as soon as is practicable.



5. Leadership in Innovation

Inspirational top leadership is critical to successful innovation.

- Top leadership must develop and communicate a clear and simple vision, and the strategy for achieving it. It also needs to provide the people and resources needed, monitor the external environment and adjust the direction as necessary.

The Key Qualities of an Inspirational Leader

Personal make up	Ambitious, committed, demanding, confident, and courageous
Novel outlook	Lateral, rule benders, risk takers, customer obsessed and visionary
Turn on capability	Listen, involve, trust, care and have fun

- Top leadership must also be mindful that the more power is concentrated, the less easy it will be for the organisation to adapt to external changes. Therefore distributing power within the organisation is important, to increase its resilience to change.
- An organisation that is serious about innovation
 - Connects** with customers, users and markets
 - Creates** successful new ideas
 - Inspires** its people to innovate
- These desired behaviours require a lot of promotion; *“Without credible communication, and a lot of it, the hearts and minds of others are never captured”* – John P Kotter, Harvard Business School. To bring about change the message needs to be consistent and relate to *“what’s in it for me”*. An organisation capable of successfully harvesting its peoples’ potential, and their ideas and can be thought of as an *“Unlimited Company”* with a culture where *“ordinary people can achieve extraordinary things”*.
- An organisation that promotes innovation as a key output must couple creativity, calculated risk, and entrepreneurial spirit with business and project delivery disciplines. An innovative organisation is, therefore always a subtle and shifting balance between the two different cultures of creativity/freedom (inspiration) and control/delivery (perspiration). This is the art of innovation leadership.

- Innovation leaders are change agents. They must be catalytic in both producing and adopting innovations. They must create the right climate, find supporters and backers, and recruit, manage and develop the delivery team. They must also create stretch goals and inspire their achievement through empowerment; provide encouragement and help to overcome problems and difficulties; and understand and react to the external world.
- Individuals are potentially susceptible to four key motivators, namely achievement and success, personal development of their skills and abilities, recognition by their peers and reward. The last is the least important. An innovative organisation will seek to ensure that as many of these are satisfied as possible.
- People cannot be given empowerment; they must be encouraged to actively take it. They will take it when they accept the goals and recognise that both freedom and support are available. *“People cannot discover new oceans until they have the courage to lose sight of the shore”*.
- Empowerment engenders personal leadership. This personal leadership is about understanding oneself and hence others, controlling emotions, seeking to create one’s future (the entrepreneurial mindset), building relationships, and communicating.

The Entrepreneurial Mindset

Change creates opportunity

Knowledge is power

Innovation is the key

Risk is acceptable

Failure is not an option

- It is very important to ensure that the creative and problem solving staff have meaningful interaction with customers in their environment, so that they can recognise potential needs and develop novel solutions.

6. Risk and Reward

Innovation is a risky business, but not innovating is even riskier.

- Risk is the product of the probability and impact of a negative outcome. Understanding, evaluating and managing this is an essential part of the Innovation process.

Risks From Innovation

Operational	Failure to meet specification, costs or launch date Damage to company reputation and brand
Commercial	Consumer resistance Competition
Financial	Investment yield is less than planned Debt/equity investors become dissatisfied

All of these are inter-related and a negative outcome in one area is likely to contribute to negative outcomes in the others, particularly financial.

- Potential risks should be considered in terms of
 - Impact (size of financial loss)
 - Likelihood of occurrence (% chance of happening)
 - Ways to reduce them

The first two are multiplied together to give an indication of significance. It is obviously not wise to take a large risk whose negative outcome could severely damage the future of the company.

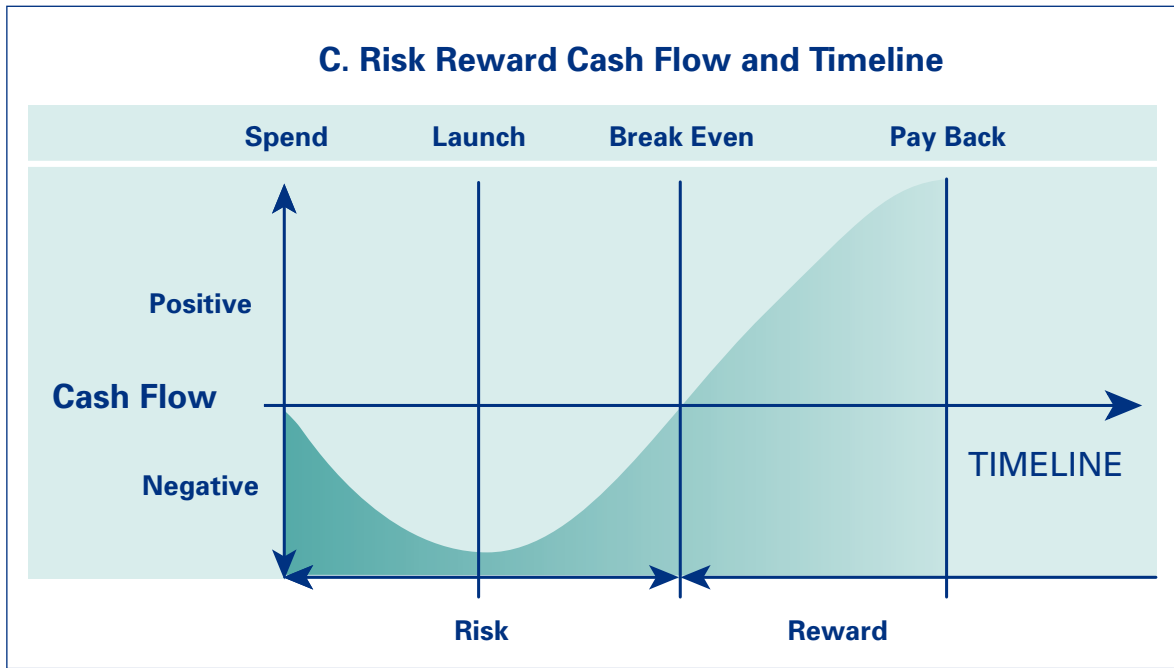
- Operational risks can usually be controlled. Commercial risks are more problematical and can only be reduced by good intelligence, test marketing and intellectual property protection through patents or secrecy and speed to market. Building in large margins and reasonable contingency costs can alleviate some financial risk.
- Ultimately the up front investment of money in innovation, through knowledge, prototypes and marketing, represents most of the risk. This may be small if the innovation is incremental (e.g. product or service improvement), or larger if the novelty is greater.

- The size and the period over which the investment is planned should be determined in advance and an appropriate commitment made. If the innovation investment involves R&D, then it may be eligible for a tax credit – see www.hmrc.gov.uk/randd
- All opportunities for innovation should have the balance between their risk and reward assessed, to determine their attractiveness. “Risk and reward travel side by side. Avoid one and the other will also pass you by.”
- A projected risk-reward cash flow over time relationship (Diagram C) illustrates the investment risk and the time to reach payback and reward. Slippage at any stage can have significant multiplying effects on the time to reach reward.
- This investment risk (the cost of innovation) can be financed internally (through use of retained earnings) or externally through debt or equity. The latter, however, brings detailed external scrutiny (due diligence) and therefore less freedom.

Risk Reduction Strategies

Advice	Mentors, Banks, Professionals, Consultants, etc.
Joint Venturing	Sharing development (financial or knowledge partnership) for a share of the reward
Licensing	Giving permission to someone else to develop and use the patented idea in return for a modest fee and royalties on the successful product
Public Sector Support	Advice, grants and tax credits

- The returns from licensing are relatively small, since the licensor takes most of the risk. However, licensing is the best route for exploitation of non-core inventions and technology.



7. The Innovation Process

Innovation is a key business process and is essential for both improving performance and growth.

- Most businesses innovate without necessarily realising that they are doing it. Like all business processes, it is best carried out in a reasonably systematic fashion.
- The process starts with an idea and ends with successful and profitable sales. It is easiest to describe in a linear fashion, but in practice many activities often take place together, or in a different order, and may require recycling. In general, the front end is more chaotic and the back end more defined.
- The “Stagegate”™ model breaks activity down into discrete linear units. Progression only occurs after satisfying certain criteria, designed to ensure that the investment is minimised in the early stages and if necessary the project abandoned sooner rather than later. In this way a portfolio of projects in an “innovation pipeline” (sometimes called the innovation funnel because many initial ideas are refined down to only a few market entry projects), can be created, with their progress matched to suit the available funding, resources and desired entry time into the market place. (Diagram D). ™ Robert Cooper
- Typical stages in the pipeline are Concept, Feasibility, Development and Implementation. Between each stage are notional gates where the idea/project is assessed against selected criteria to determine whether to progress it.

A Simple Stagegate Model

Concept Idea Generation

A very large number of ideas are considered against strategic fit, market need, impact on the company and the chances of technical success, to decide which are worth exploring further.

Feasibility Proof of Concept/Principle

Projects to go into development are selected on the basis of market acceptability, achievability of technical requirements, risk/reward criteria, and the availability of the required resources (people, facilities and money).

Development Development, Prototyping and Testing

Progress to market is dependent on satisfactory feedback on the prototype, an assessment of the competitive response, and deliverable strategies on sourcing, marketing and pricing/ margins.

Implementation Marketing and Launch

- Ideally a business should always have a living pipeline of innovation projects with some redundancy, so that a project that fails to meet the desired criteria can quickly be replaced by another that potentially does. It is also important to prevent pipeline constipation, by taking decisions as early as possible.
- When a project reaches the Development stage, it should be managed formally by a project manager, against a project plan that extends to market entry to ensure that it successfully meets its technical, time and cost expectations.
- Good idea generation is essential to create a healthy pipeline and is often a much-neglected area. Albert Einstein said, “Imagination is more important than knowledge”.

Sources Of Ideas

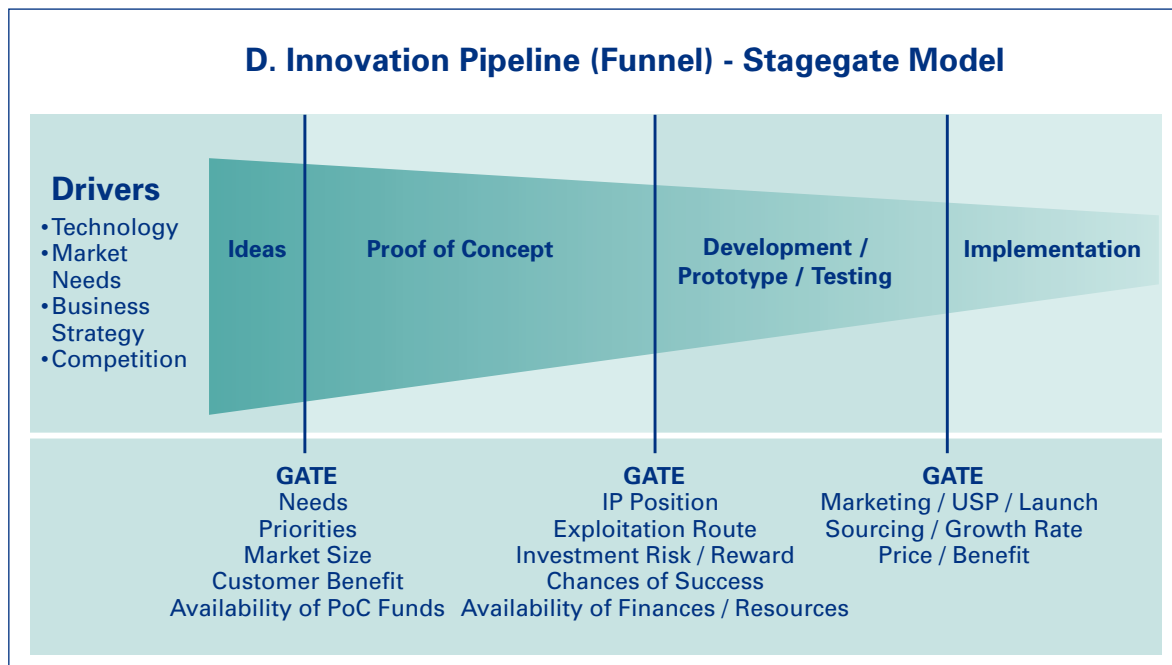
Ideas arise mainly from:

- Customer intimacy, immersion, and interaction,
- Employee involvement, in an open and receptive organisation
- Networking, with exposure to other businesses, and technologies
- Research and technology development.

It has been estimated that about 60% of good ideas arise from the first two areas. Idea generation is facilitated by inspirational leadership and an open listening culture, with good feedback.

- Using an “Innovation Ideas Team” is a good process for developing and exploiting ideas. Typical characteristics of the team are:
 1. Small and diverse, with a mix of expertise and creativity
 2. Semi-autonomous, time-limited and operating to given rules of engagement, with a trained facilitator
 3. Focused on solving problems, exploiting technology, or creating new market opportunities
 4. Starts in open mode (idea generation) and then closes down (idea selection, evaluation and improvement) to only a few developed ideas, which can then be tested

- A new idea that is proved by example is an invention, and may be protected by filing as a patent. A patent is the granting of a legal monopoly position in return for full disclosure. Alternatively, it may be better to keep the invention secret, if policing the monopoly would be difficult. A patent is the right to prevent unauthorised use of an invention within a particular territory for a limited time. To qualify for a patent, the invention must be novel, not obvious and not publicly disclosed anywhere in the world.
- The filing and granting of a sound patent is a somewhat complex process involving definitions, priority dates, territories covered, etc. Professional help from an Intellectual Property lawyer should always be sought, both for the application process and for advice on practical improvement to the invention and future protection. The Patent Office provides information and advice on patents, copyrights, designs and trademarks.



8. An Innovation Start-up

An idea can be exploited by creating a dedicated new company to carry it out.

- Incorporation allows the raising of equity or investment in the business through the issuance of shares. The company is called “a start-up” or, if the idea originates in an existing company or another organisation like a University, it is termed a “spin-out”.
- Usually the company is started by an entrepreneur, an inventor with “personal ownership” of the idea and a single-minded vision for its exploitation.

Assets of a New Company

These are likely to be

1. Intellectual property (rights based on explicit knowledge e.g. patents, copyright, design rights and trade marks).
2. The knowledge, energy and vision of the inventor or entrepreneur.

The company’s name, logo and website will also become it’s intellectual property.

- It is essential to ensure that the company owns the relevant intellectual property (I.P.), that this covers all that needs to be protected, that there are no restrictions on the company’s freedom to operate and that any special resources required for development can be easily acquired. This process is called Due Diligence. It is also important to ensure that the entrepreneur/inventor is motivated to achieve success, by having a significant stake in the outcome.
- The venture should be incorporated as a private company limited by shares (liability limited to share cost) and registered at Companies House (CH). It is not difficult, but it should always be done using professional advice and help. There are four key documents required to properly launch a company:

Incorporation Documents

Memorandum of Association	Objects and powers Authorised share capital (filed at CH)
Articles of Association	Classes of shares, preferential rights, and investor rights. Internal management (filed at CH)
Shareholders Agreement	Number of shares, their price and allocation. Shareholder rights, warranties and participation
Business plan	The Opportunity, prospects, strategy and operational plans Finance/ refinance and exit strategy

- The Business plan for exploitation, which also acts as a prospectus for potential investors, must show convincingly:
 1. How the idea/invention will be developed and successfully exploited
 2. The capability and experience of the team responsible
 3. How the cost of this will be financed, including second and further rounds of finance
 4. The proposed exit mechanism and timing, and the expected realisation value for the shareholders
- Other key questions that need to be addressed by the Business plan are:
 - what is unique about the innovation and is it protected (e.g. patents) ?
 - who will buy it and why ?
 - what price will it sell at and what will it cost to deliver ?
 - what will be the competition and how will it be resisted ?
 - when will the company start receiving income and when will it break even ?
- The value of an idea/invention grows at each stage of its development in the innovation pipeline (Diagram D) e.g. development of I.P., proof of principle, prototype, test marketing, and successful launch. These cost money, and must be financed by the founding and future shareholders. Banks are very reluctant to lend to start-up ventures with no significant assets for security, but they can become involved at a later stage.

- Shares or units of ownership in the company (the equity) should be allocated to the founders to represent the agreed perceived value of their contribution. This may be capital, knowledge/Intellectual Property, or skills (technical, market and management). Spin-outs from Universities will normally assign a significant quantity of shares to the institution as well as the inventor, in recognition of its host role in the creation of the intellectual property.
- Capital from the initial investors is required to first secure and if necessary expand the founding I.P. and then to go through the Proof of Principle stage of the Innovation Pipeline. A second round of investment will probably be needed for the Development stage and sometimes a third round for the Launch. Failure to adequately fund, at any stage, may cause the venture and company to fail.
- Cash is the lifeblood of an Innovation Start-up company. Constant attention is required to make it available, to maximise its effect and to provide new transfusions at critical stages.
- Raising finance takes a considerable time. There are four potential sources:

Start-up Finance

Equity Investors	The major source is cash for shares (3-7yrs investor time horizon). Founding and later stage investors.
Borrowings	Unsecured loans from family or friends are often used as seed funding before company formation and later converted to equity.
Grants	Modest Public sector grants to help start up businesses e.g. University Proof of Concept funds, DTI and Devolved Administration/Regional Development Agency awards are available but demand always outstrips supply.
Earnings	Sales of services, based on existing company assets. There are limited opportunities and they divert attention from the new venture.

Equity Investors

Small/Medium Sums

Business Angels	Private wealthy individuals, operating singly or in groups. They often help with contacts, strategy and management.
Corporate Venturers	Big companies interested in the technology development. They can provide both money and help.
Regional and University Seed Corn Venture Funds	Locally based funds often linked with regional strategies. Publicly and privately financed

Larger Sums (£1M+)

Venture Capital firms	Financed by parents or institutions. More likely at 2nd and 3rd round of financing.
Venture Capital trusts	Quoted vehicles offering tax incentives to investors. Prepared for risk.

- There are three requirements for an equity investor to consider, before investing.
 1. Belief in the innovation and the entrepreneur's commitment to make it successful
 2. The business plan to achieve success must be credible (Due diligence)
 3. The reward, the investor's final share of the potential valuation at exit, must be commensurate with the risks
- The founder investors usually ask for a substantial initial share (25-40%), as they bear the highest risk and their share of the reward will be diluted by second and third round investors. Investors and entrepreneurs need to remember that a smaller share of something, fully financed for success, is more valuable than complete ownership of an unproven un-financed idea.
- It is important to have a clear investment story (prospectus), that remains consistent and also to regularly communicate progress with the shareholders.

- A Board of Directors granted their powers by the Articles of Association governs the Company. The Directors duties are to act with skill, care and good faith in running the company, in the interests of the shareholders and creditors. Start-ups usually have one or two executive directors (employees; one being the Chief Executive) and several non-executive directors (including the Chairman). The non-executive directors are chosen for their knowledge and contacts often relating to the area of business. Sometimes the major investor appoints a nominee non-executive director. However, all directors are equal and must act corporately and not represent any special interests.
- Entrepreneurs, by definition, will try to see their idea right through to successful exploitation, as the Chief Executive. Inventors, however, often do not possess all the skills necessary for successful innovation and although they may take the role of Chief Executive at the proof of principle stage, where technical knowledge is the key, they will need to be replaced by someone with a broader business skill set to guide the venture through development and the company to success. This can be a difficult and painful transition.
- Newly started businesses can benefit considerably from being located in an incubator. Incubators provide cheap accommodation, and a range of appropriate skills and services, as well as advice. Statistics show that the survival rate for new businesses in incubators is typically between 80-90%.
- Investors in start-up ventures normally operate in a time frame of 5-7 years for realisation of their added value. This is achieved by an "exit event".

Exit Events

Trade Sale	Sale of all shares to a trading company
Re-financing	Sale of all shares to a Venture Capital company (who may restrict the exit of the key management shareholders)
Initial Public Offering (IPO)	Listing or floating on the London Stock Exchange or Alternative Investment Market (AIM)
Management Buyout (MBO)	Sale to the existing management, usually involving significant bank loans

- The timing of such an event depends on the success of the venture, the need for more finance, the needs of the investors, and market conditions.

9. Help and Encouragement

There is a lot of encouragement, advice and help available.

- The simplest and best form of help and encouragement is that from business friends and colleagues, who understand what you want to achieve and the kind of problems involved. Similarly, support from acquaintances in formal business networks is often available.
- Belonging to and contributing to at least one business network is very worthwhile. It keeps you in touch with what others are thinking or experiencing and allows you to meet people who may be able to offer advice or mutual help, and often provides a gateway to tried and tested public sector help. Suitable business networks can be locally based (e.g. Chamber of Commerce or University), sector or technologically focussed (e.g. trade or knowledge transfer organisations) or national (e.g. Confederation of British Industry, Institute of Directors, EEF – the Manufacturers Organisation, Federation of Small Businesses)
- Good organisations also encourage and sometimes subsidise their staff to belong to their appropriate professional bodies (e.g. management, marketing, scientific, engineering, etc.), which provide regular sources of information, run events of relevance and sometimes provide training and accreditation.
- Professional advice and help is essential for legal matters (agreements, contracts and intellectual property), financial matters (loans, solvency and tax) and registration with Companies House.
- Exploitation companies can provide invaluable support for the exploitation of inventions and intellectual property. They provide intellectual property advice, access to Proof of Concept funding, due diligence, research contracts, business plan development, company formation, licensing agreements, management skills, incubation services and access to investment.

They usually provide their value adding help in return for an appropriate modest share of either the company equity or it's future licensing income. These companies are mainly found at some Universities, at some other public sector research establishments, and also at the NHS regional innovation hubs.

- Incubators, Science Parks and University Outreach offices can also provide varying degrees of help to clients.
- Advice and help is available from local public sector support organisations either free or at low cost, for example from Business Link or the Manufacturing Advisory Service. Public sector grants for R&D, Knowledge Transfer and Collaborations are available from the DTI and export services from UK Trade and Investment (UKTI). The first two can now be accessed locally through Regional Development Agencies (RDAs) or the devolved administrations. There is also an R&D Tax Credit available from the Inland Revenue.

Public Sector

<p>DTI Innovation</p> <ul style="list-style-type: none"> • Benchmarking against leading companies in the R&D and Value-Added scoreboards. • Innovation self-assessment • Knowledge transfer partnerships • This guide on line <p>www.dti.gov.uk/innovation</p>	<p>Technology Programme</p> <p>Aims to stimulate innovation in the UK economy through higher levels of R&D and knowledge transfer. Provides support for:</p> <ul style="list-style-type: none"> • Collaborative Research & Development • Knowledge Transfer Networks <p>www.dti.gov.uk/technologyprogramme</p>	<p>DTI Global Watch</p> <ul style="list-style-type: none"> • Helps businesses to identify and access technologies and practices from overseas. • International Technology Promoters <p>www.globalwatchservice.com</p>
<p>Design Council</p> <ul style="list-style-type: none"> • Helps UK businesses use design to innovate, develop new products and open up new markets. • Website with evidence, best practice case studies and guidance about how design generates competitive advantage. <p>www.design-council.co.uk</p>	<p>Patent Office</p> <ul style="list-style-type: none"> • Commercial services to help you explore and assess your ideas. • Searchable databases and information on how patents, designs, trademarks and copyright can protect you. <p>www.patent.gov.uk</p>	<p>R&D Tax Credits</p> <ul style="list-style-type: none"> • Companies can deduct up to 150% of expenditure on R&D activities when calculating profit for tax purposes • In some circumstances SME's can claim cash • Full details of eligibility and how to apply available at: <p>www.hmrc.gov.uk/randd/</p>
<p>Business Link</p> <ul style="list-style-type: none"> • Provides information, advice and support to help businesses start up and grow. • Website helps businesses comply with regulation and improve, using online tools and information from across Government. <p>www.businesslink.gov.uk</p>	<p>Manufacturing Advisory Service</p> <ul style="list-style-type: none"> • Practical advice from experienced manufacturing advisors and specialists • Flexible service tailored to meet regional priorities and needs • Constructive opportunities for learning, networking and sharing best practice <p>www.mas.dti.gov.uk</p>	<p>UK Trade and Investment</p> <ul style="list-style-type: none"> • Network of Trade Development Officers based at British Embassies, Consulates and High Commissions provide access to overseas markets • Impartial, expert advice from International Trade Advisors • Tailored practical support services help businesses trade internationally • Confidential service helps companies locate the UK's R&D Centres of Excellence <p>www.uktradeinvest.gov.uk</p>

Networks

Federation of Small Businesses (FSB)

“The Federation of Small Businesses (FSB) is the UK’s leading non-party political lobby organisation existing to promote and protect the interests of all who own and/or manage their own businesses in the UK. With 195,000 members, the FSB is also the largest group representing the interests of UK small businesses and the self-employed.”

<http://www.fsb.org.uk>

British Chambers of Commerce (BCC)

“The BCC is one of the leading business organisations in the UK, combining unique geographical spread with extensive multi sectoral, multi sized business representation. At the heart of their local business community, Chambers of Commerce focus upon: Policy, Representation & Media Profile, International Trade, Skills Development, and Business Services.”

<http://www.britishchambers.org.uk>

Institute of Directors (IOD)

“The IoD is a professional network spanning the spectrum of business leadership, from the largest public companies to the smallest private firms. Core activities are based on the IoD mission to support, represent and set standards for directors, and range from the provision of practical business tools to professional development training and briefings on policy issues.”

<http://www.iod.com/>

Confederation of British Industry (CBI)

“Aims to help create and sustain the conditions for businesses in the United Kingdom to compete and prosper for the benefit of all. The only business lobbying organisation with offices in Washington, Brussels and Beijing, the CBI represents some 240,000 businesses employing a third of the private sector workforce.”

<http://www.cbi.org.uk/>

EEF: The Manufacturers Association

Provides advice and a wide range of business services for manufacturers on a regional basis.

<http://www.eef.org.uk/>

Trade Association Forum (TAF)

Directory of trade associations, federations and guilds.

<http://www.taforum.org/>



Specialist Advice

Finance

Institute of Chartered Accountants England and Wales
<http://www.icaew.co.uk/>

Institute of Chartered Accountants Scotland
<http://www.icas.org.uk>

Institute of Chartered Accountants N Ireland and Ireland
<http://www.icaei.ie/>

British Venture Capital Association
<http://www.bvca.co.uk/>

British Business Angels Association
<http://www.bbaa.org.uk/portal/>

Legal

Law Society England and Wales
<http://www.lawsociety.org.uk/>

Law Society Scotland
<http://www.lawscot.org.uk/>

Law Society N Ireland
<http://www.lawsoc-ni.org/>

Institute of Intellectual Property
<http://www.ip-institute.org.uk/>

Other Business Services

Chartered Institute of Marketing
<http://www.cim.co.uk/>

Chartered Institute of Purchasing and Supply
<http://www.cips.org/>

Chartered Institute of Personnel Development
<http://www.cipd.co.uk>

Also Useful

English Development Agencies

<http://www.englishrdas.com/>

Details of each region, and can put you in touch with business support and advice.

Devolved Administrations

Wales

<http://www.wales.gov.uk/>

Scotland

<http://www.scotland.gov.uk/>

Northern Ireland

<http://www.nics.gov.uk/>

UK Science Park Association (UKSPA)

<http://www.ukspa.org.uk>

Advice on starting a business and accessing finance. Finding an appropriate science park.

UK Business Incubation (UKBI)

<http://www.ukbi.co.uk>

Directory of business incubators by region

Applied Industrial Research Trading Organisations (AIRTO)

<http://www.airto.co.uk>

Directory of sector technology organisations offering help.

Universities UK (UUK)

<http://www.universitiesuk.ac.uk>

A directory of Universities in the UK.

DTI is not responsible for the content of external Internet sites.

10. Summary

- Businesses must be highly aware of the environment in which they operate and the wider changes taking place.
- Innovation is an essential business strategy to add value, and can take many forms. It is the only way to meet and stay ahead of the competition.
- Innovation will not take place without inspirational leadership and powerful motivation.
- An innovative organisation will have awareness of customer opportunities, ambitious and entrepreneurial leadership, the ability to generate and develop new ideas, and the availability of the necessary resources to achieve success.
- Innovation is a key business process and can be managed using a pipeline/funnel model, encompassing four basic stages. Movement down the pipeline is governed by evaluation at each interface or gate.
- There are risks to innovation, and these must be evaluated and considered against the potential reward. However, there are ways to manage and reduce them. There are also significant amounts of advice and help available, to those who seek it.
- Innovations using the vehicle of a new company “start-up”, require considerable additional effort to raise the risk finance through equity, probably with several rounds of refinancing, and then to provide an appropriate exit event for shareholders to realise the added value, resulting from a successful exploitation.



Author

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His experience and expertise are in new product innovation, Science and Technology strategy, R&D, Business-Higher Education partnerships and Networks. He has spent 35 years in the Chemical and Pharmaceutical Industry where his last post was Research Manager and Chief Scientist for ICI plc. He was awarded a CBE in the 2000 New Year's Honours List "for services to the Chemical Industry".

He has been an Industrialist Advisor to the DTI, for the last seven years, where his special interests are in Innovation, Networks, Business-Higher Education partnerships, the Chemical industry and regional business/science policy.

He is Chairman of several exploitation companies, a Director of the Bioscience for Business Knowledge Transfer Network, and has strong links to several Universities. He has also served on a number of National Panels related to research.

