

# **INTRODUCTION TO INNOVATION, IP MANAGEMENT & ENTREPRENEURSHIP**

**MGT-207**

**Dr. SHOBHANA.N**

**Faculty,**

**School of Management,**

**SASTRA Deemed to be University,**

**[shobhana@mba.sastra.edu](mailto:shobhana@mba.sastra.edu)**

# UNIT 1

- **Innovation:** Introduction – Importance of Innovation – Definitions – Types of Innovation: Recognising innovation in products and services; processes and procedures; management practices; marketing and distribution strategies and techniques
  - Characteristics of Innovation: Timing; Radicalness; speed – Knowledge Management: Internal Knowledge generation – Importing knowledge from outside
- **Class Discussion-** Is innovation manageable or just a random gambling activity?

## UNIT - II

- ▶ **Building an Innovative Organization: Creativity in organizations**
- ▶ – **Building organizational environment – Need Analysis: Questionnaires, Online tools, SWOT analysis;**
- ▶ **Technology watch; Focus group; Desk Research – Innovation Management Process – stages of innovation**
- ▶ - **planning and financing Innovation projects – Innovation and organization: Creating new**
- ▶ **products and services, Exploiting open innovation and collaboration,**
- ▶ **Use of innovation for starting a new venture;**
- ▶ **Class Discussion- Innovation: Co-operating across networks vs. 'go-it-alone' approach**

## UNIT - III

- ▶ Entrepreneurship: Opportunity recognition and entry strategies
  - Effectuation
- ▶ – Design thinking – Lean Start-up – Developing Business Model
  - Entrepreneurship as a Style of Management – value proposition - Maintaining Competitive Advantage –
- ▶ Financial Plan: Start up, operating and variable costs and Project appraisal: NPV, IRR, BCR techniques -
- ▶ Projections and Valuation Stages of financing: Debt, Venture Capital and other forms of Financing.
- ▶ Entrepreneurship- Financial Planning: Break even analysis: Profit volume ratio, selling price determination, cash flow statement analysis, Ratio analysis

## UNIT - IV

- ▶ Intellectual Property Rights: Introduction and the economics behind development of IPR:
- ▶ Business Perspective - IPR in India – Genesis and Development - International Context –
- ▶ Use of IPR to protect Innovation - Concept of IP Management, Use in marketing Patent- Procedure,
- ▶ Licensing and Assignment, Infringement and Penalty - Trademark- Use in marketing, example of trademarks- Domain name
- ▶ Geographical Indications- What is GI, Why protect them? -
- ▶ Copyright- What is copyright - Industrial Designs- What is design? How to protect? Class
- ▶ Discussion- Major Court battles regarding violation of patents between corporate companies

# EVALUATION

- ▶ **Class discussion – individual activity**
- ▶ **Group activity --- once a week – presentation on a company with an innovative product—idea—how it happened—key success– story of success**
- ▶ **Glossary on innovation—individual**
- ▶ **Proposal for innovative idea**

# UNIT 1

- Innovation: Introduction – Importance of Innovation – Definitions – Types of Innovation: Recognising innovation in products and services; processes and procedures; management practices; marketing and distribution strategies and techniques
  - Characteristics of Innovation: Timing; Radicalness; speed – Knowledge Management: Internal Knowledge generation – Importing knowledge from outside
- Class Discussion- Is innovation manageable or just a random gambling activity?



# Innovation



“There is a way to do it better - find it”

-Thomas Edison

# What is innovation?

---



- ❖ The term **innovation** refers to a “**new way of doing something**”. It may refer to incremental and emergent or radical and revolutionary changes in thinking, products, processes, or organizations.
- ❖ **Innovation recipes** = Creativity + Failure + Iteration

# What is innovation?



- ❖ **Schumpeter** argued that innovation comes about through new combinations made by an entrepreneur, resulting in
  - a new product,
  - a new process,
  - opening of new market,
  - new way of organizing the business,
  - new sources of supply

# Innovation and Invention



**Invention**



**Innovation**



# Types of Innovation



- ❖ Product Innovation
- ❖ Process Innovation
- ❖ Service Innovation



*Think Different*

# Product Innovation



# Product innovation



- ❖ Change in how the product is noticed by the consumers (**change in physical structure**).
- ❖ These changes include change in product design, research and development, and new product development (NPD).
- ❖ To meet customer needs and demands (**why change?**)

# Product innovation

---



- ❖ The **degree of change** can include the following:
  - ❖ Incremental improvements
  - ❖ Addition to product families
  - ❖ Next-gen products
  - ❖ New core products
- ❖ **Examples** of product innovation are as follows:
  - ❖ Introducing a new screen size for TVs.
  - ❖ Changing from a CRT TV to a flat screen.
  - ❖ Adding functionality such as internet access to TVs.

# Process Innovation

---



- ❖ It involves a **new or significantly improved method for the production** or delivery of output that adds value to the organization.
- ❖ The term “process” refer to an **interrelated set of activities** designed to transform inputs into a specified output for benefits of customers.
- ❖ Processes relate to all operational activities by which value is offered to the end customer, such as acquisition of raw Material, manufacturing logistics and after sales service.

# Process Innovation



❖ Make processes:

- simpler
- faster
- more accurate
- more reliable
- less expensive

❖ Reducing unit costs by improving the production capacity.

# Service Innovation



- ❖ Services involves **products (intangible)** that form an extended part of the product life cycle, from initial sales to end-of-life recycling and disposal.
- ❖ **Service industries in areas** such as finance, food, education, transportation, health make up most organizations in any economy. These organizations also need to innovate continuously so that they can **increase/improve the levels of service** to their customers.

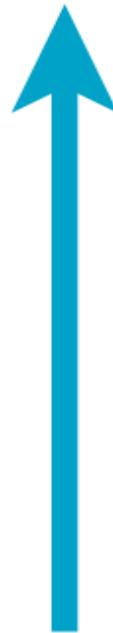
## DIFFERENT TYPES OF INNOVATIONS

| Type of innovation                | Example   |
|-----------------------------------|---|
| Product innovation                | The development of a new product  |
| Process innovation                | The development of a new manufacturing process, e.g. Pilkington's float glass process                                       |
| Organizational innovation         | <ul style="list-style-type: none"><li>- A new venture division</li><li>- A new accounting procedure</li></ul>               |
| Management innovation             | <ul style="list-style-type: none"><li>- TQM systems</li><li>- BPR systems</li><li>- SAP R/3</li></ul>                       |
| Production innovation             | <ul style="list-style-type: none"><li>- Quality circles</li><li>- JIT</li><li>- MRP II or a new inspection system</li></ul> |
| Commercial / marketing innovation | <ul style="list-style-type: none"><li>- CRM</li><li>- Direct marketing</li></ul>  |
| Service innovation                | Internet-based financial services   |

# 4 P'S OF INNOVATION

- **'Product innovation'** – changes in the things (products/services) which an organization offers;
- **'Process innovation'** – changes in the ways in which they are created and delivered;
- **'Position innovation'** – changes in the context in which the products/services are introduced;
- **'Paradigm innovation'** – changes in the underlying mental models which frame what the organization does.

**SYSTEM  
LEVEL**



**COMPONENT  
LEVEL**

New versions  
of motor car,  
aeroplane, TV

Improvements  
to components

New generations  
e.g. MP3 and  
download vs.  
CD and  
cassette music

New components  
for existing  
systems

Steam power,  
ICT ‘revolution’,  
bio-technology

Advanced  
materials to  
improve  
component  
performance

**INCREMENTAL**

(‘doing what  
we do better’)



**RADICAL**

(‘new to the  
enterprise’)

FIGURE 1.1 Dimensions of innovation

# INNOVATION SPACE- 4 P'S OF INNOVATION

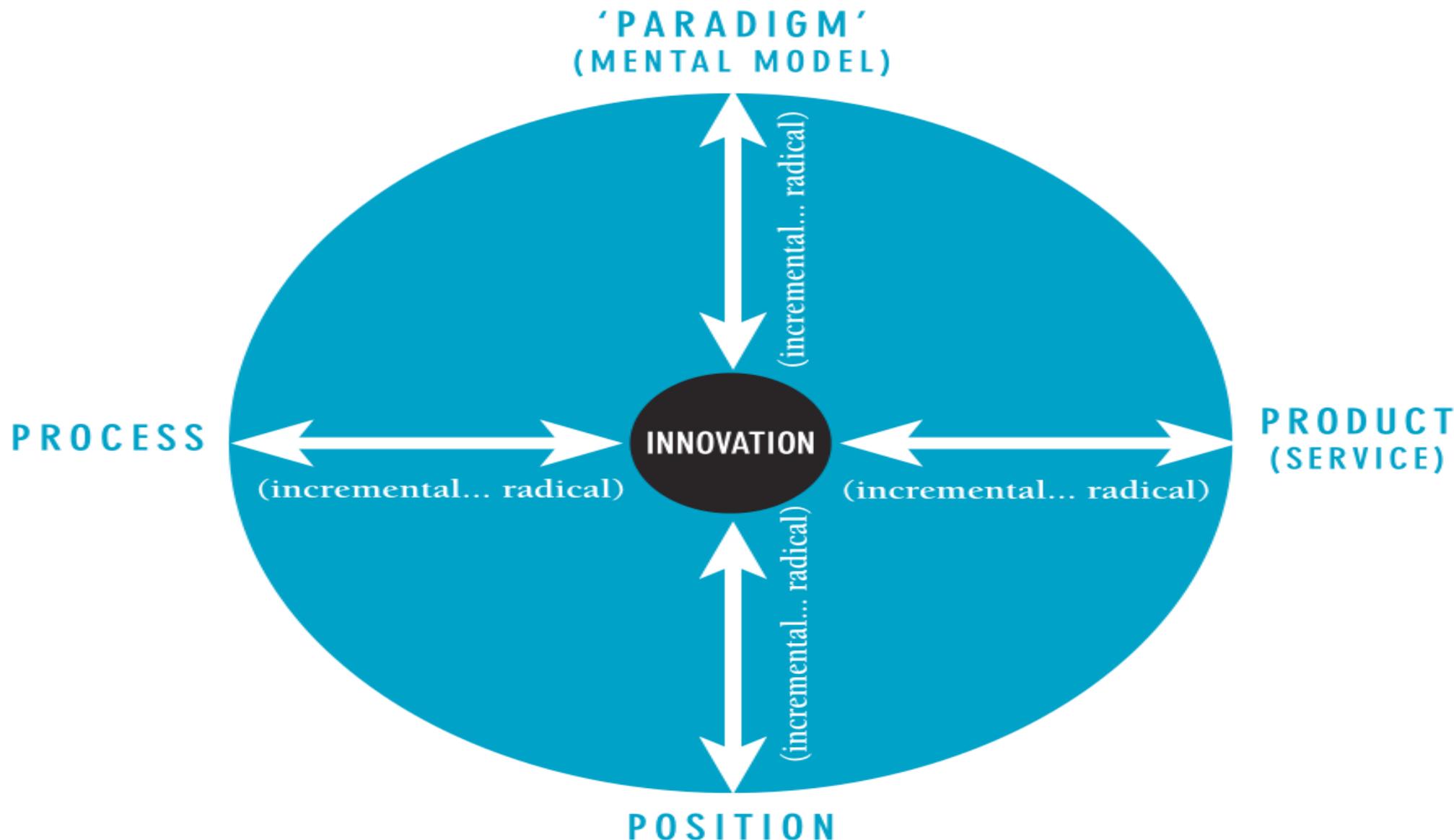


FIGURE 1.2 Innovation space

# MAPPING INNOVATION SPACE

- ▶ Each of our 4Ps of innovation can take place along an axis running from incremental through to radical change; the area indicated by the circle is the potential innovation space within which an organization can operate.
- ▶ Whether it actually explores and exploits all the space is a question for innovation strategy.
- ▶ As far as managing the innovation process is concerned, these differences are important.
- ▶ The ways in which we approach incremental, day-to-day change will differ from those used occasionally to handle a radical step change in product or process.
- ▶ But what is the perceived degree of novelty which matters; novelty is very much in the eye of the beholder.
- ▶ For example, in a giant, technologically advanced organization like Shell or IBM advanced networked information systems are commonplace, but for a small car dealership or food processor even the use of a simple PC to connect to the Internet may still represent a major challenge

# Importance of innovation

- Competitive pressures and the need to survive --  
The management of a firm or enterprise. Managers have to implement change, new processes and improvement in systems.
- The impact of innovation on organization
- Gary Hamel (1998), writing in the Sloan Management Review, suggests that *only those companies that are capable of recreating themselves and their industries in a profound way will be around a decade hence*. The warning is simple, innovate or perish!

# The impact of innovation on the organisation

## Outcomes from the innovation process

- **Tangible outcomes** are outcomes which are observable and apparent
- **Increased corporate success in measurable terms**
- **Greater efficiency** --A more structured approach -- product and service development --greater focus shown by both management and employees--- deliver effective changes and greater efficiency.
- **Happier, more flexible and more productive employees.** --feel more valued -- more loyal to the organization, -- more flexibility -- higher productivity-- less absenteeism -- lower employee turnover rate.
- **A more modern, high-tech working environment**--modernize their employees' working environment -- employ new technology to enhance the organisation's effectiveness and efficiency --positive impact on employee's morale.
- **Continuous improvement.** the internal processes and procedures-- which support the delivery of the innovation--tend to be both innovative and increasingly effective.

→ **Intangible outcomes tend to be psychological in nature, at the level of beliefs and attitudes. They often outweigh the tangible outcomes and can include the following:**

- **Senior Managers** tend to exhibit a **high level of confidence** in their own judgement. They tend to be **willing to take risks**, to speculate and sometimes **to think the unthinkable**.
- Employees tend to develop a **profound interest** in each other's ideas and **opinions**. This results from **adopting an innovative attitude** (i.e. one that is open, aware and questing for new or novel solutions to both threats and opportunities).
- An increase in **team cohesion** at project and organization level.
- A change in **leadership style**. ---**mentoring, encouraging and understanding**.

# Recognizing innovation in products and services

## → Scanning for ideas

- Ideas are the starting point for innovation. An innovative organization encourages its employees to scan for ideas for new products and services, both inside and outside the organization.
- Employees are 'enabled' to scan for novel ideas by acquainting themselves with the organisation's market place and changes in technology.

## → Strategy formulation

- The innovative organization will be prepared to devote energy and time to formulating strategy.
- The innovation of new services and products is an interactive process which requires a delicate balance of structure and flexibility.

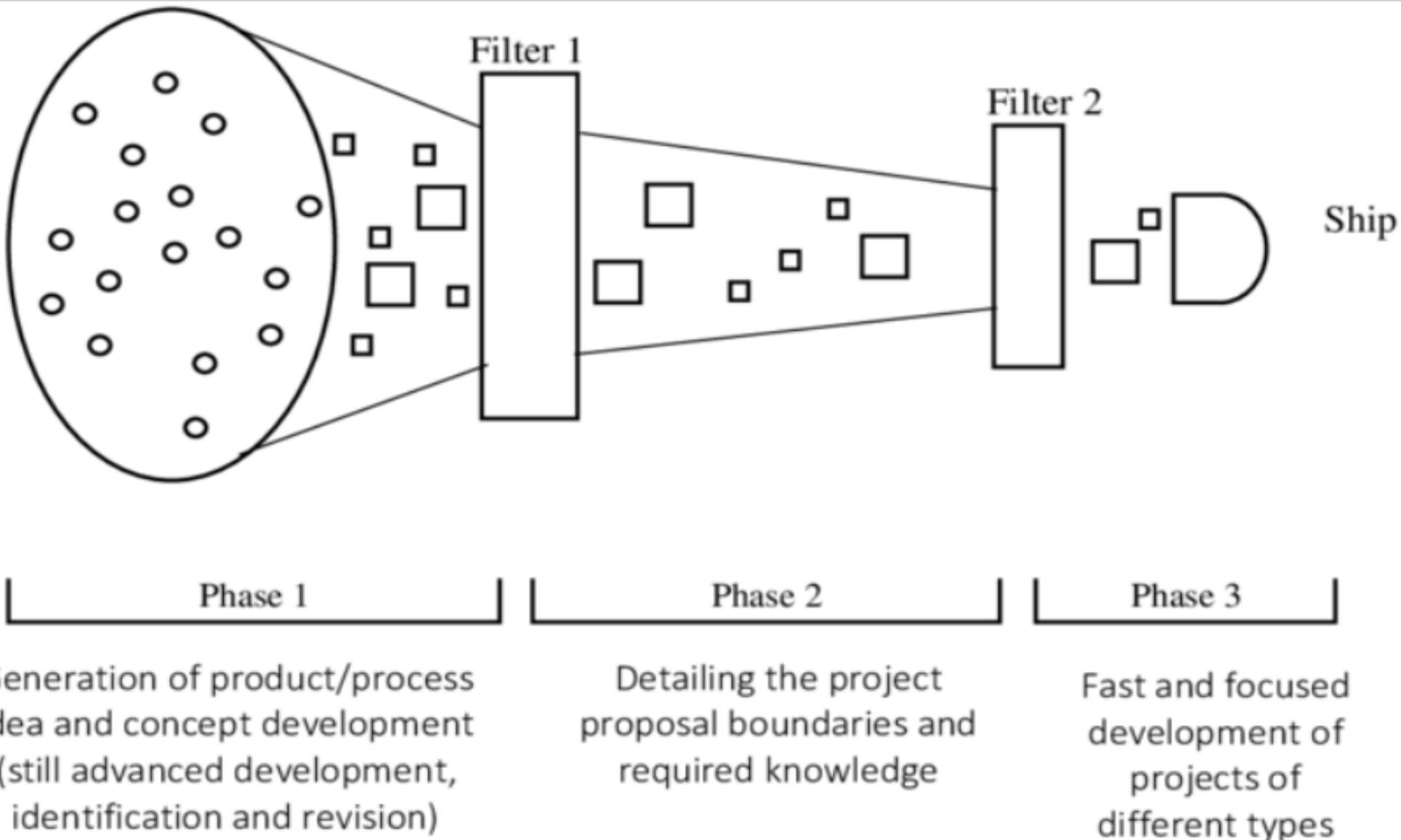
- The innovation framework is clear and well defined and closely follows on from the overall business strategy
- The organisation's master strategy calls for innovation to be a strategic concept. Innovations are allowed to emerge but they have to comply with the core business thrust.
- Strategy is informed and not imagined. Concepts are tested and alternatives are investigated with different perspectives being considered during the decision making process
- Suppliers of components and subsystems are invited to become part of the strategy formulation process
- Leading clients are identified and knowledge is shared

## Effective resourcing

- ▶ The innovative organization will involve itself in correctly resourcing changes to products and services.
- ▶ Research and development is seen to be an important part of the future of the organization.
- ▶ Employees involved in research and development work towards a common goal and express a feeling of achievement, even if new products are not 100% successful in pre- sales trials.
- ▶ Resources are not always vested in the team or organization.
- ▶ Some resources may only be available through external cooperation. This implies an ability to negotiate and innovate through partnerships.

## Managing product innovation

- ▶ Managing product innovation involves managing the structure and culture of the organization as well as managing external linkages and the innovation process itself.
- ▶ New product development can be considered to be a **funnel** (Wheelwright and Clark 1992). The outline concept is squeezed into a detailed design that is further reduced through testing into the product that is to be launched.
- ▶ The process refines and reduces risk of failure.
- ▶ The **funnel** is **very effective** when working in cross-functional teams, where a danger exists that a project may become enhanced rather than refined.



# Implementation

- ▶ The implementation of a new service or product is accompanied by **organizational acclaim** in an innovative company.
- ▶ The **acclaim** is underpinned with a **mixture of confidence and concern**.
- ▶ Most employees will **express confidence** in their new product because their **diligence and effort** has led to **concept ownership** but they also feel **concerned** because they know that the **innovation process** is **virtually endless**.

# Recognising innovation in processes and procedures

- ▶ The processes and procedures of an organization are the **support systems** that enable the products and services to be developed, produced and delivered to the customer.
- ▶ The recognition of innovation in processes and procedures is normally a **matter of internal knowledge and experience** of the way that the organization supports its business endeavours.
- ▶ The innovation of processes and procedures requires an **astute knowledge of the factors** that affect product/service efficiency and effectiveness within the organization.

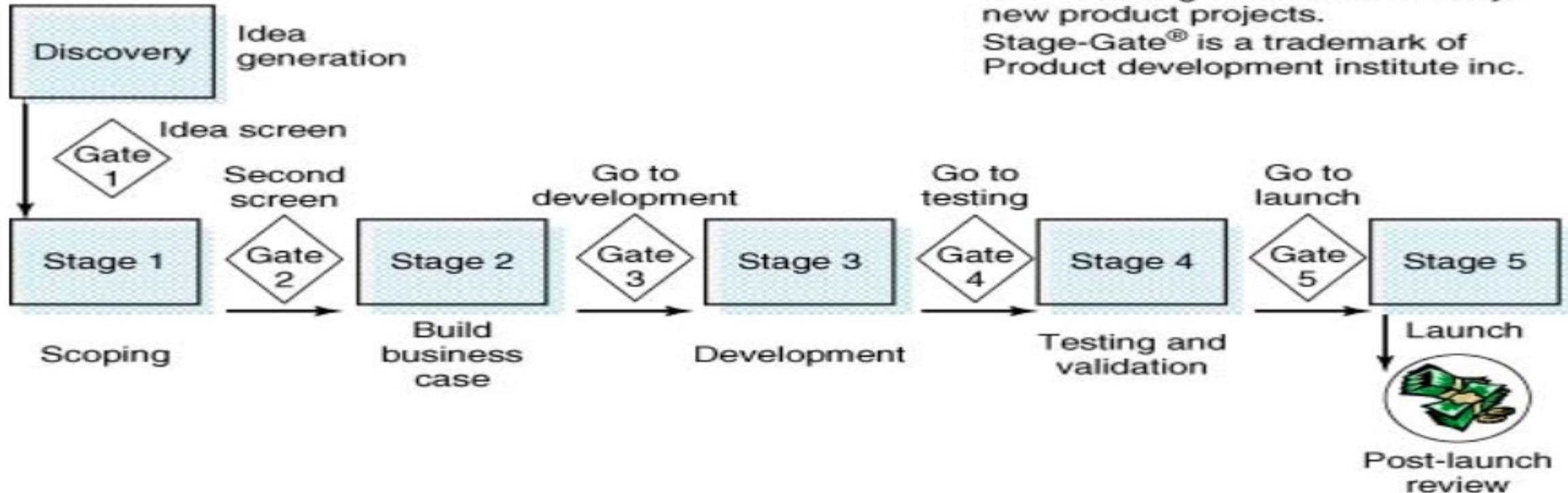
# Characteristics of an innovative organization --its processes and procedures.

- Highly effective, non-invasive monitoring systems -- alert management to changing circumstances and alterations in standards of delivery.
- Processes act as a firm base --built project plans, interdepartmental co-operation and the norming of behaviours.
- Within the province of the staff and management --- design, implement and monitor the necessary changes without reference to external influences.
- Employees in organizations that continually up-grade their systems can suffer from a surfeit of change. However, well-motivated and well informed staff not only readily adopt innovations but they often enhance the innovation by expressing their own opinions and co-operating fully both change and the implementation of new procedures.
- Clearly, process changes should be focused on supporting the broader strategy of the organization, developing competitiveness and giving sustainability.
- Innovations which involve processes and procedures can have both tangible and intangible outcomes and can be predominantly hard or soft in nature.

# HARD AND SOFT PROCESS INNOVATIONS

- ***Hard process*** innovations normally use computers or machines and improvement can be observed quite readily (or example, a larger amount of output is achieved for the same or lower level of input).
- ***Soft process*** innovations are more difficult to recognize as they involve people and their behaviour and their approach to both daily work and moments of crisis. The flow of work through a factory can be planned but employees can radically affect the success or failure of the plan.

# Stage gate Process



# Recognising innovation in management practices

- Managers --encourage early involvement --commitment to projects.
- The manager has to establish that their department has “ownership” of the innovation
- Managers have to create and maintain an environment that is both open and motivational.
- Understand and appreciate the strategy that is being followed. Disseminate the strategy to the work force and communicate changes, improvements and variations to the appropriate departments.
- Mentoring....and not giving orders
- Target clarity and performance indicators that give measures against which progress can be measured.
- Rewards --- linking a proportion of the amount that is paid to the progress of the project.
- Take time to develop...subordinates
- Training --an investment and not as a cost and learning is a habit rather than an infrequent event.

# Recognising innovation in marketing and distribution strategies and techniques

- ▶ Marketing and distribution concerns bringing the product or service to the attention of the buyer.
- ▶ This involves much more than just creating product awareness, it involves the creation of desire and ease of purchase and need satisfaction.
- ▶ The marketing and distribution process is becoming more sophisticated with the employment of greater levels of technology to assist with the analysis of primary data as well as the development of new delivery channels and in the right form.
- ▶ Innovations in marketing and distribution break the normal pattern, but not in a way which offends existing and potential customers.

- Innovations in marketing and distribution break the normal pattern, but not in a way which offends existing and potential customers.
- We can recognise innovations because we realise the outcome has been to change the relationship with customers.
- Intel ran its “Red X” campaign to attract the attention of consumers, rather than their traditional approach of selling to PC manufacturers.
- The company Ben and Jerry's gives a free scoop of ice cream to mothers and expectant women on Mother's Day.
- Other examples are: Tupperware, who developed the “party plan” method of selling, Direct Line Insurance Services (based on telephone sales) and Amazon Books who sell to customers exclusively via the Internet rather than face-to-face selling. These and other innovations have resulted from “thinking outside the box”.

- Before the “Intel Inside” campaign, Intel had been largely unknown to consumers. The company had a reputation for its technical prowess and quality among original equipment manufacturers (OEMs), but it had not seen much need to cultivate a similar renown among end users. That began to change in the late 1980s — the PC market was creating a huge demand for central processing units, and with that came a new imperative for Intel to explain the desirability of its products to lay consumers. Intel’s response to that imperative, the Intel Inside campaign, would make advertising history, turn Intel into a household brand name and create a valuable shortcut through which OEMs could signal the quality of their products to customers.
- Intel first began to address the need to reach out to consumers with the “Red X” campaign to market the 386 microprocessor. The 386 was a major technical breakthrough, but at first it lagged in sales, even trailing Intel’s own 286. Dennis Carter, a marketing specialist and technical assistant to Andy Grove, determined that the problem was that consumers did not understand the 386’s advantages and were inclined to trust the established, popular product because it was a proven entity even though it was outdated and not significantly cheaper

286





- ▶ **Tupperware, who developed the “party plan” method of selling,**
- ▶ **Direct Line Insurance Services (based on telephone sales)**
- ▶ **Amazon Books who sell to customers exclusively via the Internet rather than face-to-face selling.**
- ▶ **“thinking outside the box”.**

# Types of Innovation- Marketing and distribution strategies

## Technological (New and novel products in an un-novel market)

- ▶ Known customer needs are satisfied with novel products and services. An example of this is the use of film optics replacing copper wires in telephone systems. The result is an improvement in services and call clarity.

## Differentiated (Existing products in an existing market)

- ▶ In this instance the product and the market are relatively well known and the only way to differentiate between products is to use prices, packaging or product support.

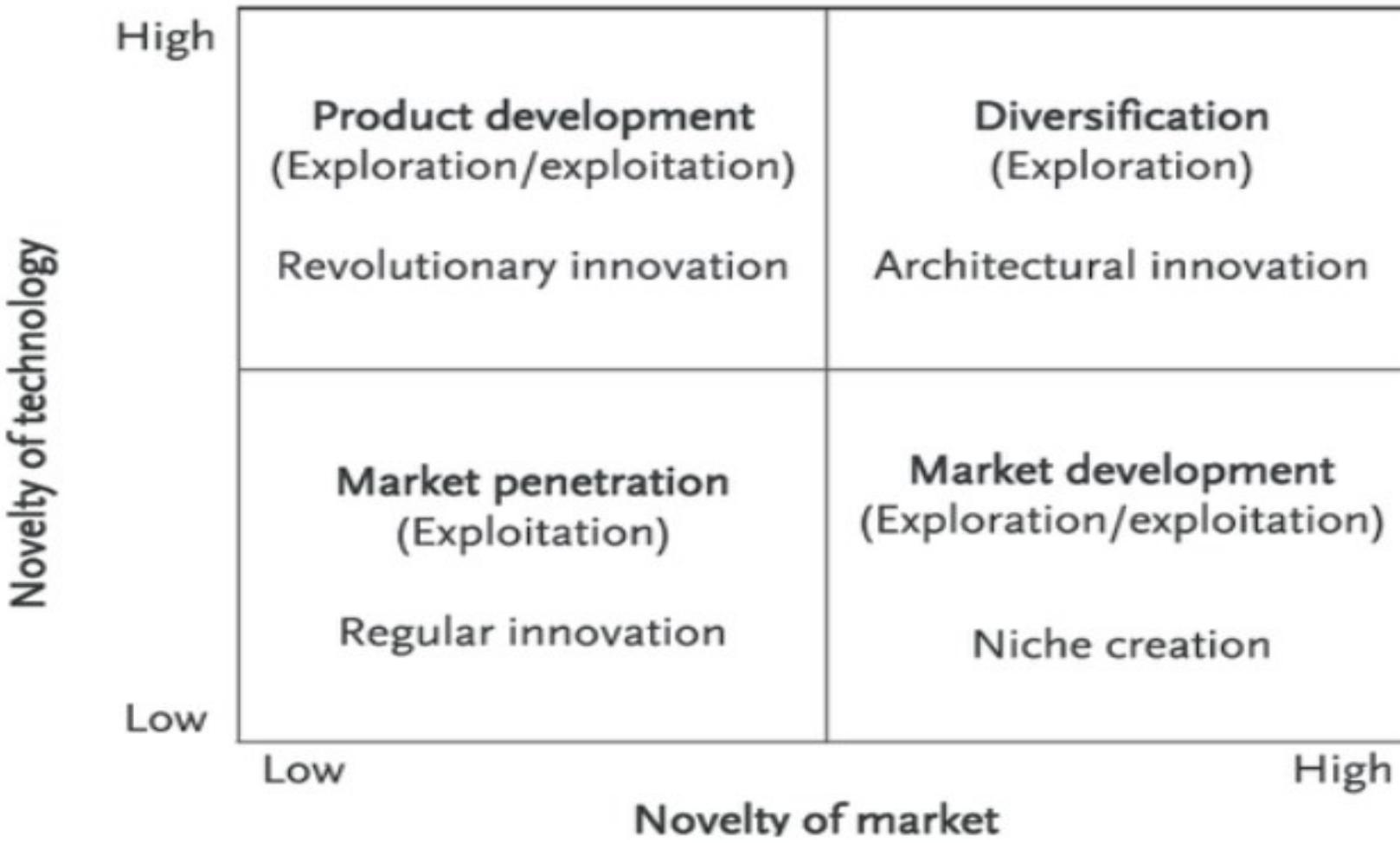
## Architectural (Existing products in a novel market)

- ▶ The innovative marketer will attempt to encourage a new designation of customers to accept an established product or service by adoption or recombination. The marketing required to stimulate this change of perception is derived from knowledge of collaborations and product reformation-thinking sideways.

## Complex (Novel products and services being introduced into novel markets)

- ▶ The development of the multi-media machine or the IT integrated office has evolved by linking similar technologies to gain greater efficiency and variability. Marketing these products requires a high degree of imagination and intuition. Innovative marketing can be observed in the representation of a product or service or the degree of novelty that is employed in the way that a product is designed to attract the buyer's attention.

# Types of Innovation- Marketing and distribution



**TABLE 1.1 Strategic advantages through innovation**

| Mechanism                                 | Strategic advantage  | Examples  |
|---|--|---|
| Novelty in product or service offering    | Offering something no one else can   | Introducing the first . . . Walkman, fountain pen, camera, dishwasher, telephone bank, on-line retailer, etc. . . . to the world  |
| Novelty in process                        | Offering it in ways others cannot match – faster, lower cost, more customized, etc.                          | Pilkington's float glass process, Bessemer's steel process, Internet banking, on-line bookselling, etc.   |
| Complexity                                | Offering something which others find it difficult to master  | Rolls-Royce and aircraft engines – only a handful of competitors can master the complex machining and metallurgy involved   |
| Legal protection of intellectual property | Offering something which others cannot do unless they pay a licence or other fee                             | Blockbuster drugs like Zantac, Prozac, Viagra, etc.   |
| Add/extend range of competitive factors   | Move basis of competition – e.g. from price of product to price and quality, or price, quality, choice, etc. | Japanese car manufacturing, which systematically moved the competitive agenda from price to quality, to flexibility and choice, to shorter times between launch of new models, and so on – each time not trading these off against each other but offering them all |

## Timing

First-mover advantage – being first can be worth significant market share in new product fields

Fast follower advantage – sometimes being first means you encounter many unexpected teething problems, and it makes better sense to watch someone else make the early mistakes and move fast into a follow-up product

Amazon.com, Yahoo – others can follow, but the advantage ‘sticks’ to the early movers

Palm Pilot and other personal digital assistants (PDAs) which have captured a huge and growing share of the market. In fact the concept and design was articulated in Apple’s ill-fated Newton product some five years earlier – but problems with software and especially handwriting recognition meant it flopped

| <i>Mechanism</i>                             | <i>Strategic advantage</i>   | <i>Examples</i>   |
|--|--|---|
| Robust/<br>platform<br>design                | Offering something which provides the platform on which other variations and generations can be built  | Walkman architecture – through minidisk, CD, DVD, MP3 . . . Boeing 737 – over 30 years old, the design is still being adapted and configured to suit different users – one of the most successful aircraft in the world in terms of sales. Intel and AMD with different variants of their microprocessor families |
| Rewriting the<br>rules                       | Offering something which represents a completely new product or process concept – a different way of doing things – and makes the old ones redundant           | Typewriters vs. computer word processing, ice vs. refrigerators, electric vs. gas or oil lamps  |
| Reconfiguring<br>the parts of<br>the process | Rethinking the way in which bits of the system work together – e.g. building more effective networks, outsourcing and co-ordination of a virtual company, etc. | Zara, Benetton in clothing, Dell in computers, Toyota in its supply chain management  |

# Phases of Innovation



Innovation has  
two phases :

Design Phase

Implementation  
Phase



# Design Phase

---



❖ The design phase is marked by much divergent thinking and creativity, brainstorming, search for alternatives, etc. Research studies suggest that the management of the design phase needs to be marked by great administrative flexibility and these types of innovation to achieve the necessary growth to survive.

# Implementation Phase



- ❖ It requires a very different mode of management.
- ❖ It involves putting the chosen innovation to work.
- ❖ Much planning needs to be done, careful coordination & control, and evaluation of progress.

# Implementation Process Of Innovation

❖ **Radical innovation** - It is about making major changes in something established. Focus is significant in relation to expected changing in the system. A change can be represent a radical innovation, when viewed at technological level, but the impact may be only incremental when viewed at an organization level.

# Implementation process of innovation

---

❖ **Incremental innovation** :- It is less ambitious in its scope and offers less potential for returns for the organization, but consequently the associated risks are much less. It consists of smaller endeavors, making than easier to manage than their larger innovation.



# Implementation process of innovation



## Radical versus Incremental Innovation

### RADICAL INNOVATION: Project Trajectory



- Explores new technology
- High uncertainty
- Focuses on products, processes or services with unprecedented performance features
- Creates a dramatic change that transforms existing markets or industries, or creates new ones

### INCREMENTAL INNOVATION: Project Trajectory



- Exploits existing technology
- Low uncertainty
- Focuses on cost or feature improvements in existing processes, products or services
- Improves competitiveness within current markets or industries

# Implementation process of innovation



## **Incremental and Radical Innovation**

- Prepare for future growth
- Create new market niches
  
- Enhance efficiency
- Increase quarterly profits



*Strike a synergistic balance in your innovation portfolio between **the immediate** and **the future***





# The Exciting New F<sup>2</sup> ("Fork Fan")

Designed by World Renown Entrepeneur: Rod Ryan



## Featuring:

- \* High Tech Ergonomic Design
- \* Two Speed "Whisper Quiet" Fan
- \* Right and Left Handed Compatible
- \* Stainless Steel Anti-Corrosion Materials
- \* Dishwasher Safe!

*"This is the BEST new kitchen innovation I have ever seen! Ideal for prison food!" Martha Stewart*

Worth  
modem362@earthlink.net  
1000.com





The Morning Routine...

Check & Watch:

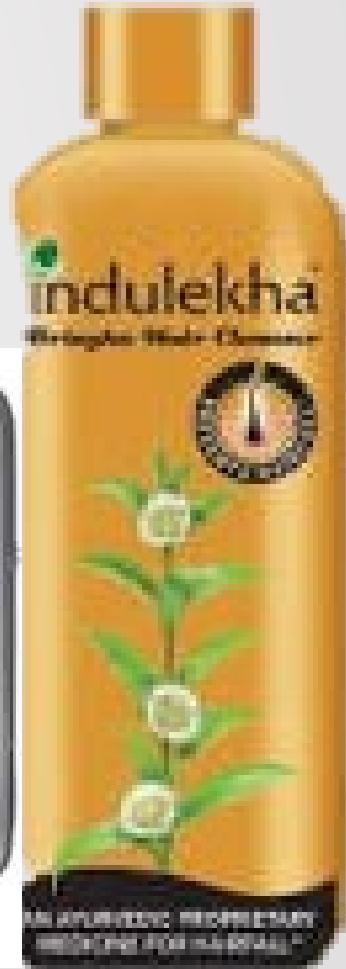
- Email
- Weather
- Traffic
- Stocks
- Comics
- Clock



# Different types of Innovations

## ► Product innovation

Axe, Indulekha, Kellogg's, Colgate, Lizol, Mortein, VIP, VLCC and Max Life



# CHARACTERISTICS OF INNOVATION

## Relative Advantage



- The degree to which an innovation is perceived as being better than the idea or practice it replaces. Relative advantage is associated with economic profitability. However, economics is not the only consideration in determining relative advantage. *Example: Adoption of the new corn variety may yield higher economic profitability due to higher yields from less pest pressure and lower irrigation cost.*

## Compatibility

- The degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters. Each innovation must be compatible with an individual client's values, ideas, and needs.

## Complexity

- The degree to which an innovation is perceived as difficult to understand and use. The more complex the innovation, the slower the rate of adoption.

## Trialability

- The degree to which an innovation may be experimented with on a limited basis. *Example: Corn Producers may be willing to try the new variety on limited acreage to assess its merit.*

## Observability

- The degree to which the results of an innovation are visible to others. The easier it is for others to see the results of an innovation, the more likely they will adopt it. *Example: If Producer A is successful in increasing yield and obtaining higher profits with a new corn variety, Producers B, C, and D will be more likely to plant the new variety as well.*

# CHARACTERISTICS OF INNOVATION

- Timing
- Radicalness
- Speed
- ▶ **Timing:** *The most novel idea may, by its very nature, sound the most ridiculous.* Timing can affect both the contribution and the relevance of an innovation.
- ▶ **It may be a product “ahead of its time”.** Sometimes luck plays a big part in innovation.
- ▶ **The fax is a classic example of a product which “took off” due to the UK's postal strike – it needed mass adoption to be useful and had the PC and the Internet been available earlier, it may well never have been a commercial success.**
- ▶ **A whole range of factors lead to the failure of many good ideas because of the impact of those factors on “time to market”.**

► **Degree of radicalness:**

- Radical innovations tend to come about through a rationalist approach and aim to create large scale change (for example, the introduction of the National Curriculum in state schools).
- Incremental innovations emerge in a more organic fashion and create gradual, bit-by-bit change (for example, a programme of continuous improvement in customer service).

► **Speed of innovation:**

- Speed of innovation can be critical. Speed affects the cost, quality and timing of the innovation and ultimately its “competitiveness” and its success.
- Many organisations are not fast innovators, and those that have established innovation speed as a competitive advantage have had to overcome time-consuming policies and practices (Prahalad and Hamel, 1990).

# **Google's Continuous Innovation**

## **Innovation Examples**

- Driverless car, maps
- YouTube
- Google Glass
- Google Fiber, Project Loon
- Google Goggles



## **Management System**

- Google[x] (moonshots)
- Acquisitions (Makani)
- 20% time
- Quick demos
- Run lots of experiments and let the market decide
- Fail fast and learn, scale up quickly if it shows promise
- Culture of openness, analytical rigor, and respect for workers

# What is Knowledge Management (KM)

"Knowledge Management is the discipline of enabling individuals, teams and entire organizations to collectively and systematically create, share and apply knowledge, to better achieve their objectives."

# Benefits of Knowledge Management

- Reduces time-to-market
- New products are designed and commercialized more quickly and successfully

## Resulting In

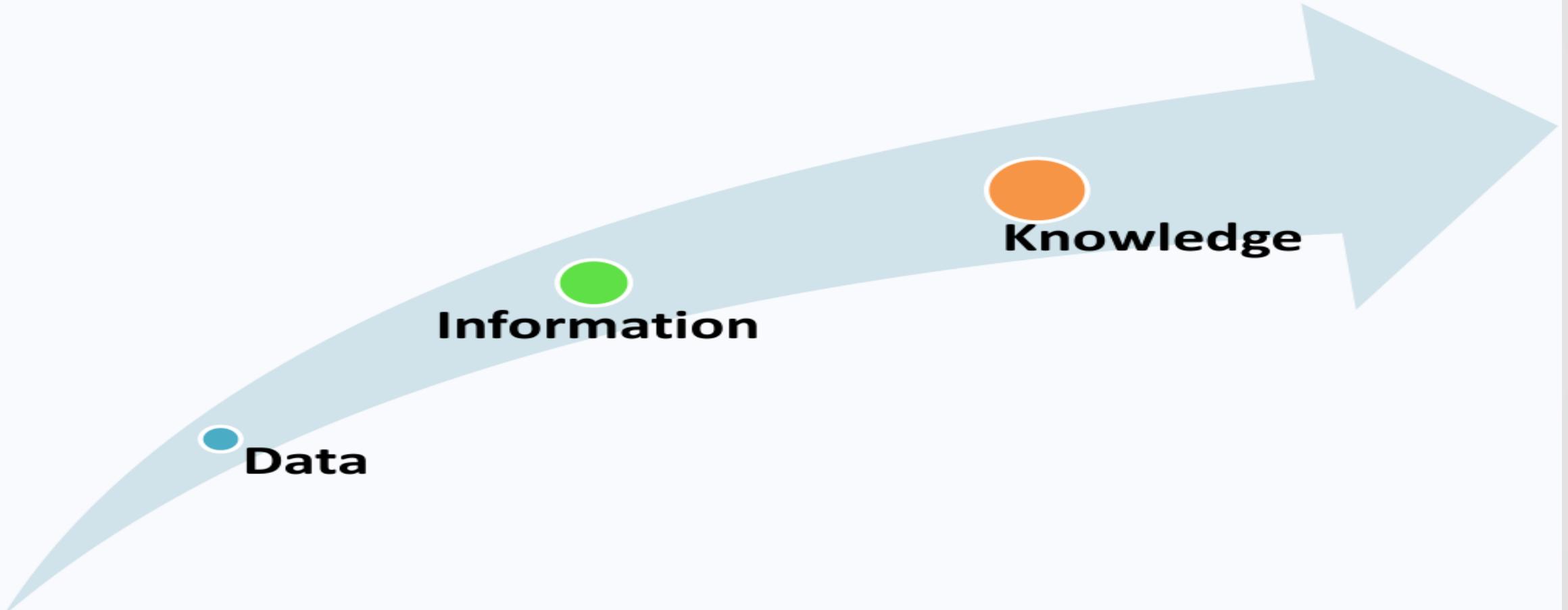
- Increased Revenue
- Retained Market Share
- Expanding Profit Margins



# Benefits of Knowledge Management

- Chevron reduced its operating cost structure by more than 2 billion
- Texas Instruments generated 1.5 billion in annual increased fabrication capacity
- Scandia reduced start-up time for new ventures to seven months
- Arthur Andersen (Accenture) has improved their quality of service, helped lower research costs, and shortened delivery time

# How Knowledge is Formed



## DATA

- **Data** is a set of **objective facts about events or activities**, and within an organisation is **normally structured** in some **form or another**.
- Some believe that if enough data is gathered then decisions based on data will be easier to make. This is a false assumption as too much data can make it harder to identify the meaningful data from unnecessary data.
- Furthermore there is no meaning in data – it is simply a **collection of facts**.

# INFORMATION

- Information has meaning.
- Data can be transferred into information in a number of ways. To convert data to information it can be:
  - **Contextualised** – we know the **purpose of the data** being captured.
  - **Categorized** – we know the **units of analysis** or **key components** of the data.
  - **Calculated** – the data may have been **formally analysed**.
  - **Condensed** – the data might have **been reduced to a more concise form**.

# KNOWLEDGE

- Knowledge can be seen as having a **broader, deeper and richer meaning than data or information.**
- It comes about as a result of **people's experiences, values, insight and contexts.**
- It can be stored in formal systems such as libraries, documents and electronic media.
- It is stored also in the routines and process practices and norms of an organisation

- To convert information to knowledge it needs to be transformed through:
- **Comparison** – how does the information we have about this situation compare to other situations that we have known?
- **Consequences** – what implications does the information have for decisions and actions?
- **Connections** – how does this bit of information relate to others?
- **Conversation** – what do other people think about this information?
- Two-thirds of knowledge is gained by face to face contact between people and the value of knowledge can increase with use as more connections are made during conversations

# Two Types of Knowledge

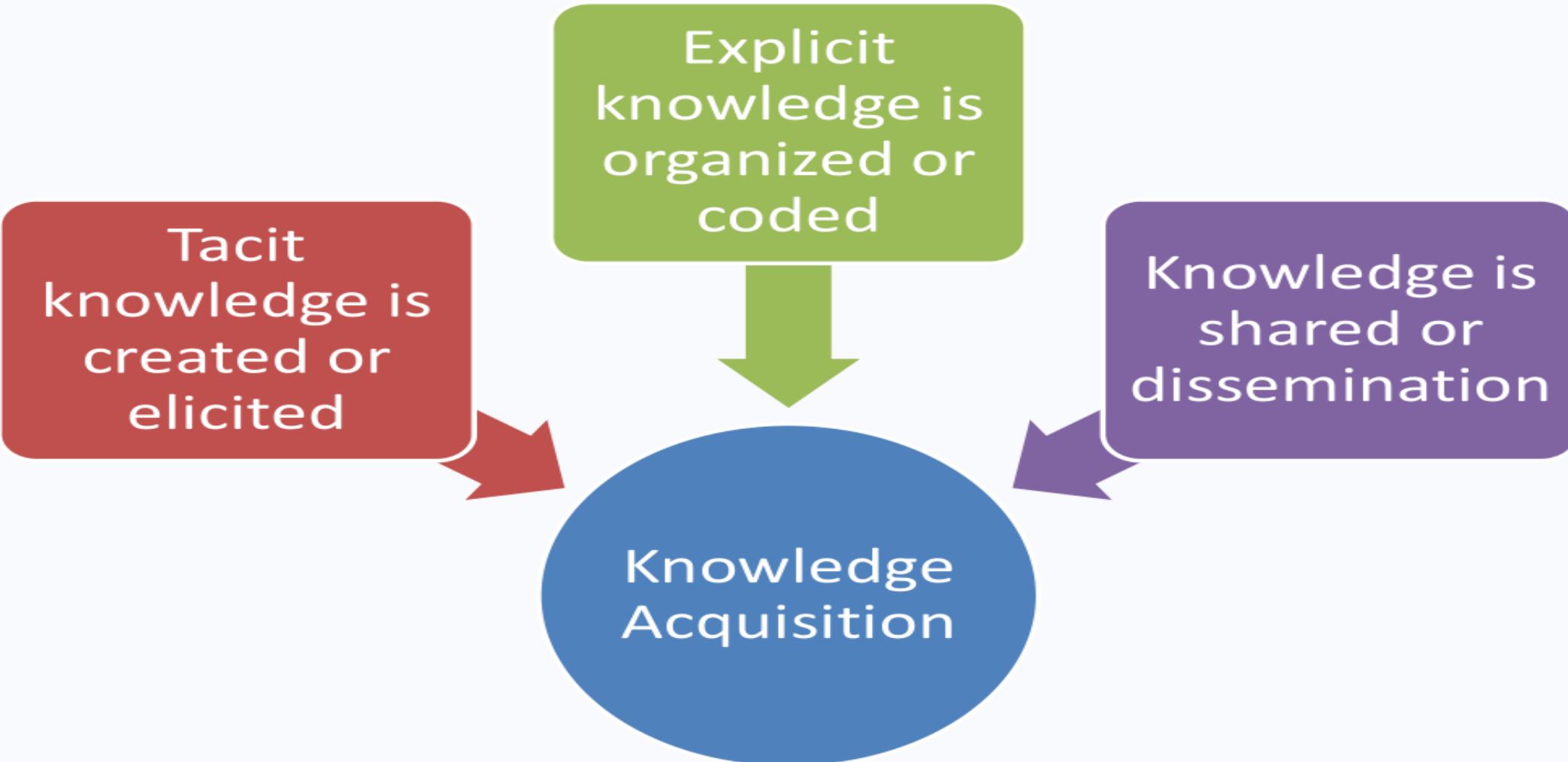
Explicit

- **Information that is written down or codified**

Tacit

- **Information that is stored inside a person's mind**

# Knowledge Acquisition



# Capturing Tacit Knowledge

Interviewing  
Experts

Learning by  
Being Told

Learning by  
Observation

Learning  
from Others

Ad Hoc  
Sessions

Road Maps

Learning  
Histories

Action  
Learning

E-Learning

# Knowledge markets

- Knowledge Buyers
- Knowledge Sellers
- Knowledge Brokers
- Knowledge buyers can be seen as people who are trying to resolve complex issues that require complex answers.
- Knowledge sellers are people in an organisation who have a reputation for possessing substantial knowledge about process or subjects that others are interested in.
- Knowledge brokers (gatekeepers, boundary spanners) make connections between knowledge buyers and sellers.

# Internal knowledge generation

- Dedicated resources:
  - Library, R & D department
- Fusion –Creative abrasion—
- “innovation occurs at the boundaries between mind sets, not within the provincial territory of any one knowledge and skill base
- Adaption: --Adapt or die
- Create a sense of crisis--
- Networks—
- Self organizing networks that over time ---more formalized
- Common factors:
- All efforts that produce new knowledge –adequate time and space--- devote –knowledge acquisition and development
- Space: . Space means libraries, laboratories, formal meeting areas and informal meeting areas such as the coffee machine

# Codifying and distributing knowledge

- Tacit knowledge.....Bring it to form – accessible to those who need it

## → **Four Principles of Knowledge Codification:**

- Decide the business goals that the codified knowledge will serve.
- Identify the knowledge that exists in whatever form that will help achieve those goals.
- Evaluate the knowledge for usefulness and appropriateness for codification.
- Identify a suitable medium for codification and distribution.

# Tacit knowledge

- Tacit knowledge, that which is held by an individual, and includes that individual's hunches, feelings and experiences is almost impossible to codify
  - try explaining in detail how you play tennis

## • **Mapping knowledge**

- A properly designed database or “map” can be drawn up to show who has what knowledge and where people can go to obtain that knowledge. This map can be pictorial or textual and effective use can be made of hypertext prompts to make the map effective

## • **Mapping technology**

- Computer technology can help make knowledge maps work

- Knowledge transfer: The best way to transfer knowledge is to hire clever people and let them talk to each other.
- Give people time to think and allow them to have conversations.
- Everyday knowledge transfers come about as a result of discussions, the brief chat in the corridor or a few words over lunch. These everyday knowledge transfers are part of organisational life but are local and fragmented.
- One of the most effective being the transferring of people between the R&D function and the other business functions. Secondments to other parts of the organisation or to suppliers and customers are also methods of transferring knowledge.

**Knowledge fairs -set up booths, unstructured forums for participants**

## **Culture of knowledge transfer**

- They encourage the building of personal relationships through face-to-face meetings and they provide the time to allow these events to happen.
- They ensure that status and rewards go to those who are willing to share their knowledge, not just hoard it.

## Technologies for knowledge management

- With the advent of technology and organisation-wide intranets--- it is becoming easier for organisations to store vast amounts of knowledge electronically.
- Retrieval of knowledge in this technological network --- search engines, thesaurus and language translation software.

## Implementing a Knowledge Management Technology :

- Implementing a Knowledge Management Technology is more a cultural change issue than a technology implementation issue

## Types of Technology:

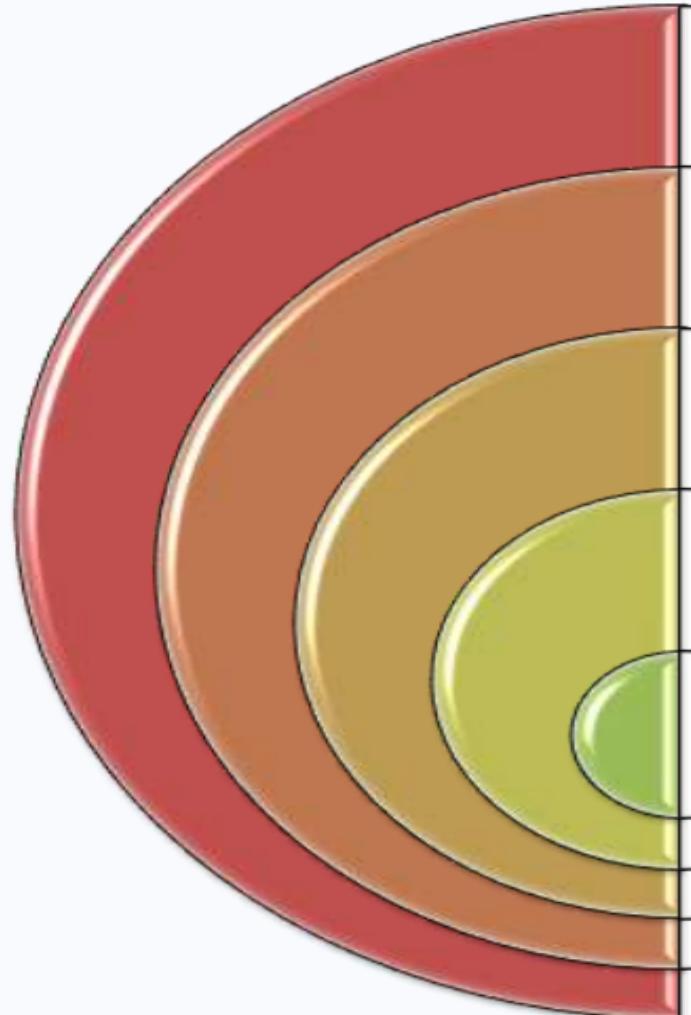
- **Broad Knowledge Repositories** consist of depositories of structured explicit knowledge that can be accessed by the use of relatively unskilled people making use of search engine technology, the Internet being a prime example
- **Focused Knowledge Environments:** knowledge of a few experts to be tapped by a much larger group of workers. An ideal example being the insurance sales force who can do the financial planning that their customers need, without knowing much about financial planning.

**Real Time Knowledge Systems** are used by well trained users when knowledge has to be transferred quickly such as in customer support or “help desk” applications.

- The users can be the experts, or the system can make use of **case-based** reasoning where the customer or individual requiring help can give an idea of the symptoms that their problem is exhibiting.

**Long-Term Analysis Systems** such as **neural networks** can be used when time is available and the user is well educated or trained. They are heavily statistically based and have the capability of learning from previous solutions.

# Knowledge Management Tools



- Data Mining**
- Content Management Tools**
- GroupWare**
- Blogs**
- Wikis**

# Sources of Information

**Other People**

**E-Mail Groups**

**Discussion Groups**

**Shared Virtual Workspace Interactions**

**Community Yellow Pages**

**Community of Practice (CoP) Groups**

# Community of Practice Groups

“A group of people, along with shared resources and dynamic relationships, who assemble to make use of shared knowledge, in order to enhance learning and create a shared value for the group.”

Seufert, von Krogh, and Bach,  
1999; Adams and  
Freeman, 2000



# Community of Practice Groups Contain

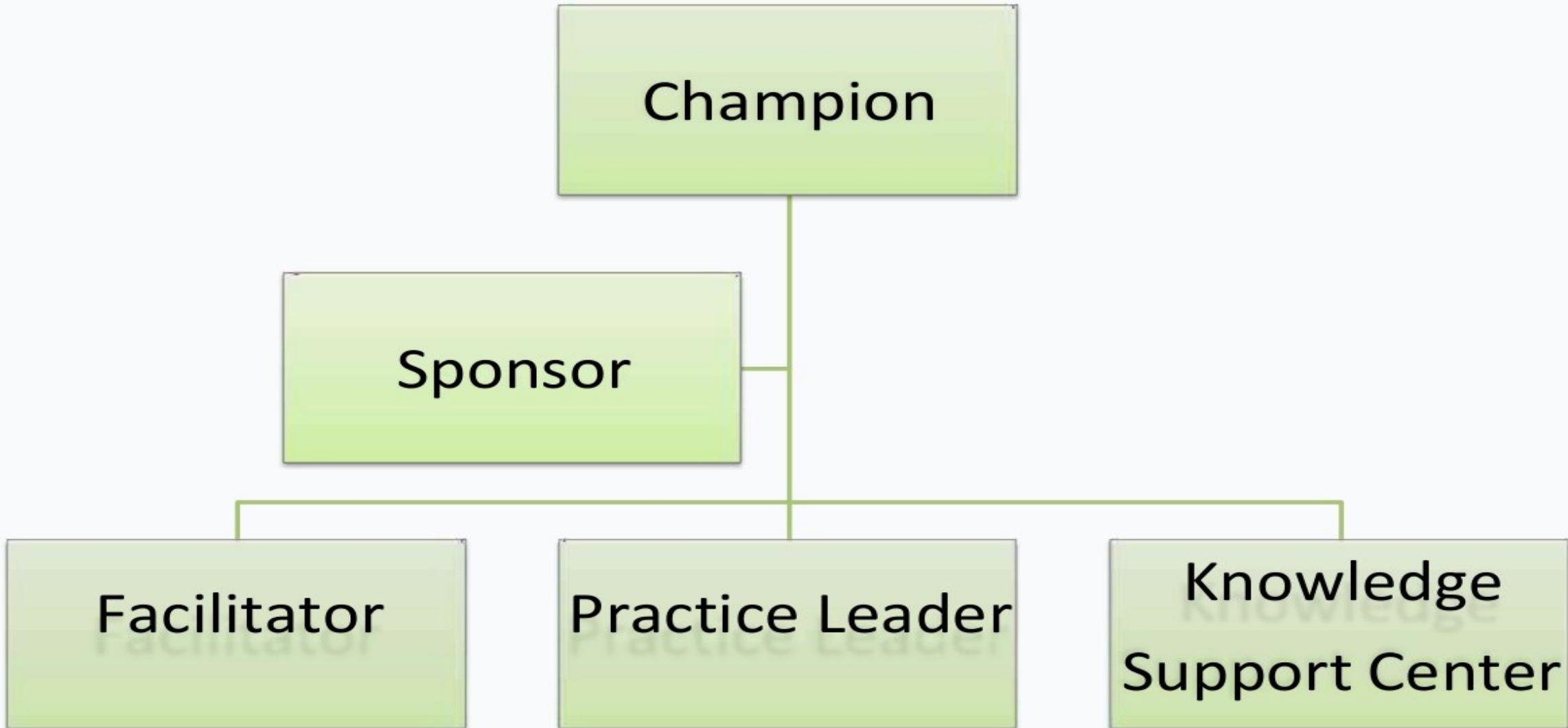
Member Generated Content

Member-to-Member Interaction

Events

Outreach

# Community of Practice Roles





**SASTRA**  
ENGINEERING - MANAGEMENT - LAW - SCIENCES - HUMANITIES - EDUCATION  
DEEMED TO BE UNIVERSITY  
(U/S 3 OF THE UGC ACT, 1956)

THINK MERIT | THINK TRANSPARENCY | THINK SASTRA



**THANK YOU**



▶ <https://mvp.microsoft.com/studentambassadors>

<https://summerofcode.withgoogle.com/>