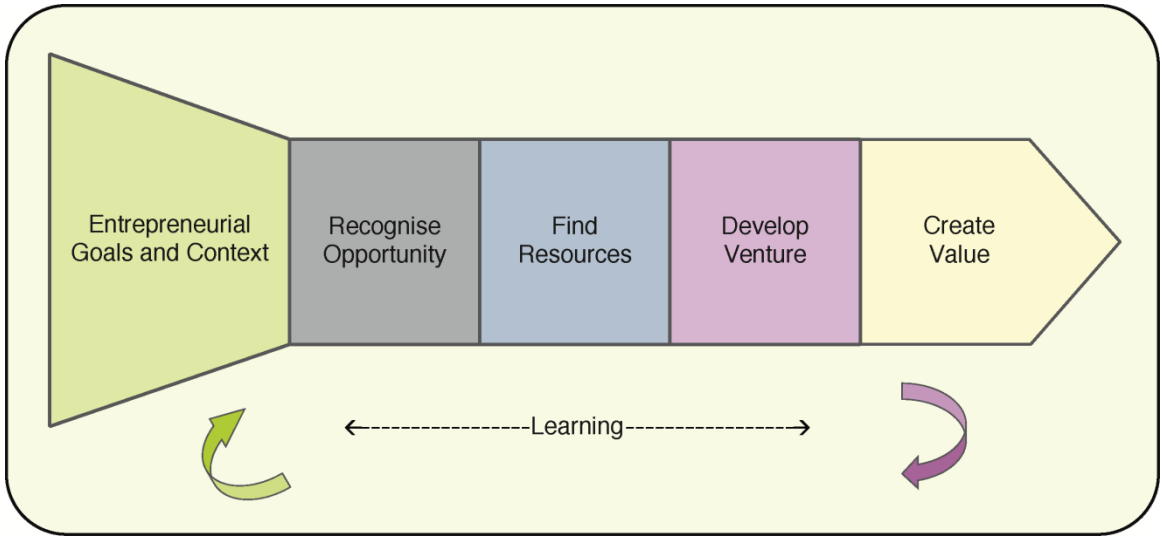
Lecture 4

Learning to Manage Innovation

Learning to Manage Innovation

- Innovation is a generic process, running from ideas through to implementation
- It is about weaving knowledge and resources together
- Innovation process is to organize, manage and find opportunities, mobilizing resources, developing the venture and capturing the value
- It is necessary to view innovation as an extended sequence of activities – a process
- The innovation process involves the process of :
  - S/W Entrepreneur goals and context
  - Recognizing the opportunity
  - Finding the resources
  - Developing the idea
  - Capturing the value



Learning to Manage Innovation – Recognizing the Opportunity

- Software entrepreneurship give the "drive"; but without business idea… engine will be running on empty
- Software entrepreneur should:
  - **Explore the technology space**
  - **Explore market**
  - **Explore what others are doing (competitors and potential JV, VC)**
  - **Explore future space**
- How? :
  - Manage good "win-win" relationship with suppliers
  - Understand the needs of our customers/end-users
  - Work with universities and research centres to develop business knowledge
  - Open to suggestions ideas for improvements
  - Compare our products and processes with competitors

Learning to Manage Innovation – Finding the Resources

- It is important to have relevant resources and skill-set to "realize" the business idea
- Software entrepreneur should know :
  - What resources need to take business opportunities forward?
  - To identify the resources which we will need; and work out where and how to get those we don't have?
  - Build rich networks to access to wider resources?
  - Build contingency plan especially to key resources
  - Learn from how others have obtained resources?

Learning to Manage Innovation – Developing the Venture

- It is about balancing resources against a budget of time and money, i.e. developing something against a background of uncertainty
- The big difference with innovation is no one will know whether or not things will work until someone starts doing it
- What makes for success in Product/Service Innovation?

Key needs/issues	Key mechanisms
Systematic process for progressing new products/services	Stage-gate model. Close monitoring and evaluation at each stage
Early involvement of all relevant functions	Bringing key perspectives into the process early enough to influence design and prepare for downstream problems. Early detection of problems leads to less rework
Overlapping/parallel working	Concurrent or simultaneous engineering to aid faster development whilst retaining cross-functional involvement
Appropriate project management structures	Choice of structure – e.g. matrix/line/project/heavy-weight project management – to suit conditions and task
Cross-functional team-working	Involvement of different perspectives, use of team building approaches to ensure effective team-working and develop capabilities in flexible problem-solving
Advanced support tools	User of tools – such as CAD, rapid prototyping, computer-supported co-operative work aids – to assist with quality and speed of development
Learning and continuous improvement	Carrying forward lessons learned – via post-project audits, etc. development of continuous improvement culture

Learning to Manage Innovation – Innovation Auditing

- Innovation audit helps with making the organization more effective in ways it deals with innovation challenge – for survival or growth
- Possible innovation performance matrices, measures and indicators

Measures and Indictors	Matrices
• **Output** • **Operational/Process elements** • **Measures to be compared across sectors or enterprises** • **Strategic success**	• Customer satisfaction measures • Time to market Development man-hours per completed innovation • Process innovation average lead time for introduction • Measures for continuous improvement

Learning to Manage Innovation – Developing Innovative Capabilities

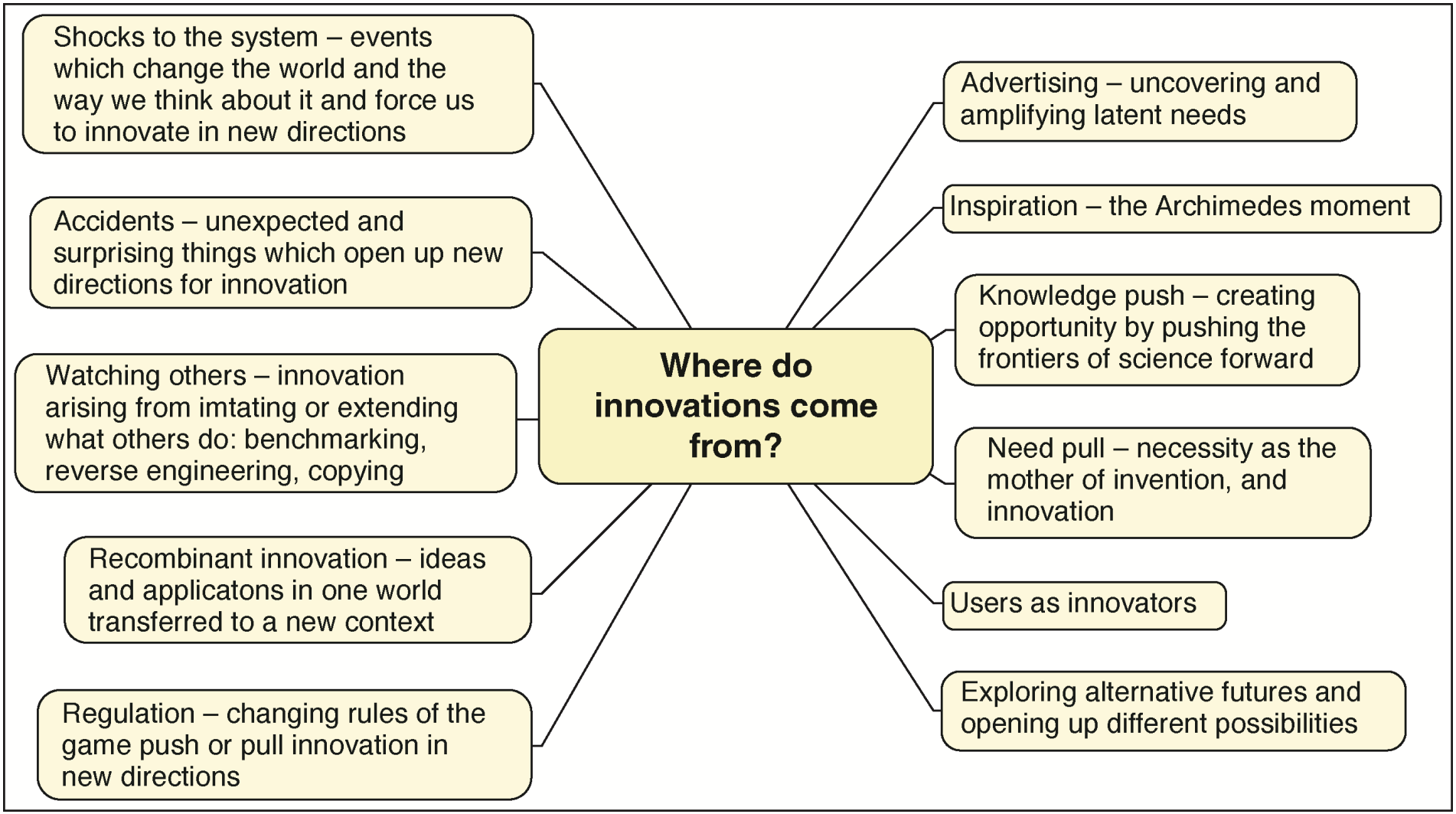
- A wide range of structures, tools and techniques exists for helping and managing the elements of innovation process. The challenge is to adapt and use them essentially in a learning process
- There are variety of approaches to effective learning and some ways to improve learning capabilities are:

Reflection	Conceptualize	Experiment	Experience
What happened, what worked well, what went wrong	Capture and codify lessons learned into frameworks and eventually procedure to build lessons learned	• Willingness to try to manage things differently next time, to see if lessons learned are valid	honest capture of experience (both success and failure)
• Post-project reviews • Benchmarking • Structured audits • Project evaluation • measurement	• Theories and models • New structures and process designs • Formal planning reviews • Training and development	• Pilot projects • Testing and prototyping • R&D activities • Designed experiments and simulations	• Captured experience – on video, via diaries, project records, photographs, etc • Sharing experience – via display, direct exchange, etc. • Documentation and display • Measurement

Where Do Innovation come from?

- Innovation
  - process of taking ideas forward, revising & refining them, weaving the different strands of 'knowledge spaghetti' together towards a useful product, process or service.

- Innovation come from many different directions and need to manage it effectively.


Where do innovations come from?
Shocks to the system – events which change the world and the way we think about it and force us to innovate in new directions
Accidents – unexpected and surprising things which open up new directions for innovation
Watching others – innovation arising from imtating or extending what others do: benchmarking, reverse engineering, copying
Recombinant innovation – ideas and applicatons in one world transferred to a new context
Regulation – changing rules of the game push or pull innovation in new directions
Advertising – uncovering and amplifying latent needs
Inspiration – the Archimedes moment
Knowledge push – creating opportunity by pushing the frontiers of science forward
Need pull – necessity as the mother of invention, and innovation
Users as innovators
Exploring alternative futures and opening up different possibilities

Sources of Innovation: Knowledge Push

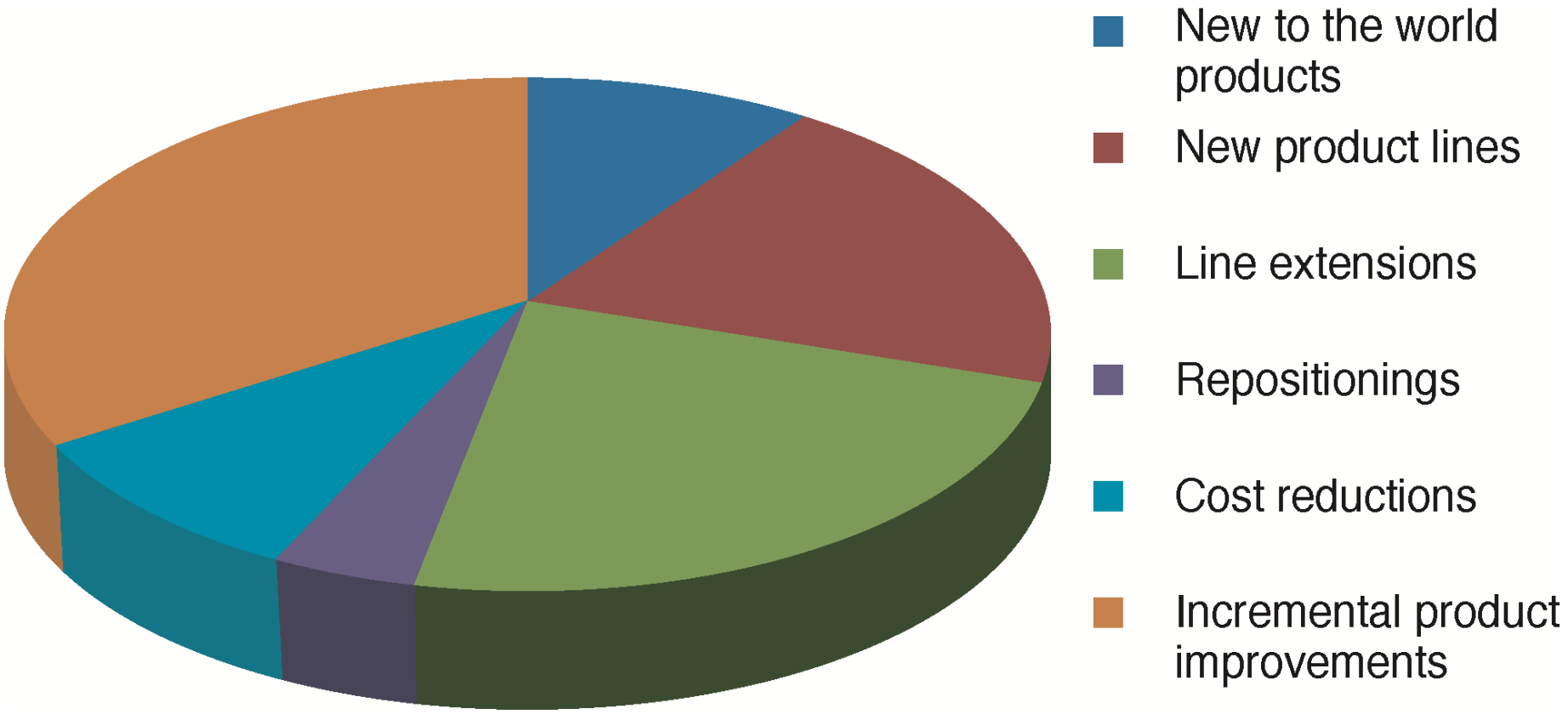
- Creating opportunity by pushing the frontiers of science forward.
- Emerge as a result of scientific research.
- Growing field of automation & ICT technology came from organized R&D effort.

Sources of Innovation: Need Pull

- Complementary pull to the knowledge push
  - necessity as the mother of invention and innovation.

- Innovations requires some form of demand if it is to take root.
  - Bright ideas are not enough, may not meet a real/perceived need & people may not feel motivated to change.
  - need to develop a clear understanding of needs and finding ways to meet those needs.

Typical Breakdown – Types of New Product



Need Pull

- Important at mature stages in industry or product life cycle when there is more than one offering to choose from.
  - Competing depends on differentiating on the basis of needs and attributes, segmenting the offering to suit different adopter types.
- Increase in the urgency of a need/the extent of demand can have a forcing effect on innovation.
- Strong tradition of social need providing the pull for new products, process and services.

Sources of Innovation: Working at the Edge

- Lies at the edges of existing markets.

- Disruptive innovation is often associated with entrepreneurs working at the fringes of a mainstream market and finding groups whose need are not being met.
  - May creates different innovation options
  - Sometimes what has relevance for the fringe begins to be of interest to the mainstream.

Sources of Innovation: Emerging Markets

- Considering the major growth in the world economy.

- Contain large, young and increasingly affluent populations who are fuelling the demand for products and services and whose needs will increasingly shape the innovation agenda.
  - Their needs may be fundamentally different to those of the markets we have traditionally focused upon.
  - May represent a ‘fringe’ group

Sources of Innovation: Towards Mass Customization

- The rise of a desire for customization
- Powerful driver for innovation
  - Move from conditions where products are in short supply to one of mass production so demand for differentiation increases.
- MC – the ability to offer highly configured bundles of non-price factors configured to suit different market segments.

TABLE 5.1 Options in customisation (after Mintzberg and Lampel[1])

Type of customisation	Characteristics	Examples
Distribution customisation	Customers may customise product/service packaging, delivery schedule and delivery location but the actual product/service is standardised	Sending a book to a friend from Amazon.com. They will receive an individually wrapped gift with a personalised message from you – but it's actually all been done online and in their distribution warehouses. iTunes appears to offer personalisation of a music experience but in fact it does so right at the end of the production and distribution chain
Assembly customisation	Customers are offered a number of predefined options. Products/services are made to order using standardised components	Buying a computer from Dell or another online retailer. Customers choose and configure to suit their exact requirements from a rich menu of options – but Dell only start to assemble this (from standard modules and components) when your order is finalised. Banks offering tailor-made insurance and financial products are actually configuring these from a relatively standard set of options

(*continued*)

TABLE 5.1 (*Continued*)

Type of customisation	Characteristics	Examples
Fabrication customisation	Customers are offered a number of predefined designs. Products/ services are manufactured to order	Buying a luxury car like a BMW, where the customers are involved in choosing ('designing') the configuration which best meets their needs and wishes – for engine size, trim levels, colour, fixtures and extras, etc. Only when they are satisfied with the virtual model they have chosen does the manufacturing process begin – and they can even visit the factory to watch their car being built Services allow a much higher level of such customisation since there is less of an asset base needed to set up for 'manufacturing' the service – examples here would include made to measure tailoring, personal planning for holidays, pensions, etc.
Design customisation	Customer input stretches to the start of the production process. Products do not exist until initiated by a customer order	Co-creation, where end users may not even be sure what it is they want but where – sitting down with a designer – they co-create the concept and elaborate it. It's a little like having some clothes made but rather than choosing from a pattern book they actually have a designer with them and create the concept together. Only when it exists as a firm design idea does it then get made. Co-creation of services can be found in fields like entertainment (where user-led models like YouTube are posing significant challenges to mainstream providers) and in healthcare where experiments towards radical alternatives for healthcare delivery are being explored – see, for example, the Design Council RED project which is discussed on the website

Sources of Innovation: Users as Innovators

- Users are ahead of the game.
- Their ideas plus frustrations with existing solutions lead them to experiment and create something new.
- Sometimes these prototypes eventually become main stream innovations.
- Ex: medical devices
  - active users amongst medical professionals have provided a rich source of innovations for decades.

Sources of Innovation: Extreme Users

- The idea of extreme environments
  - important variant which picks up on both the lead user and the fringe needs concept.
- The users in the toughest environments may have needs which by definition are at the edge
  - Any innovative solution which meets those needs has possible applications back in the mainstream.
- Eg: antilock braking system (ABS)

Sources of Innovation: Watching Others

- Imitation – learning from others
  - Eg: reverse engineering
- Concept of benchmarking
  - Enterprises make structured comparisons with others to try to identify new ways of carrying out particular processes or to explore new product or service concepts.
  - Comparing between similar organizations or looking outside the sector but at similar products or processes.
  - Concept of ‘lean’ thinking.

Sources of Innovation: Recombinant Innovation

- To involve something new to the world.
- a process of Transferring or combining old ideas in new context.
- Plenty of scopes for cross-over – ideas and applications which are commonplace in one world may be perceived as new and exciting in another.
- Eg: Reebok pump running shoes
  - A significant product innovation in the highly competitive world of sports equipment- yet although this represented a breakthrough in that field it drew on core ideas which were widely used in a different world.

Sources of Innovation: Regulation

- Restricts certain things and opens up new ones along which change is mandated to happen.
- Eg: the increasingly tough legislation in areas like carbon emissions and pollution drive for moving into environmentally sustainable 'clean' technologies.

- Regulations can trigger counter-innovation
  - Solutions designed to get round existing rules or at least bend them to advantage.

Sources of Innovation: Futures and Forecasting

- Imagining and exploring alternatives trajectories to the dominant version in everyday use.

- Various tools and techniques for forecasting and imagining alternative futures are used to help strategy-making
  - Can also be used to stimulate imagination around new possibilities in innovation.

Sources of Innovation: Accidents

- Accidents and unexpected events happen
  - In the course of a carefully planned R&D project they could be seen as annoying disruptions.
  - On occasion accidents can also trigger innovation, opening up surprisingly new lines of attack.

A Framework for Looking at Innovation Sources

- Push or Pull Innovation?
- Incremental or Radical?
- Timing?
- Adoption and Diffusion?

Framework for Innovation Sources: Push or Pull Innovation?

- Innovation is never a simple matter of push or pull but rather their interaction.
- 2 complementary direction:
  - Creating possibilities (or at least keeping track of what others are doing along the R&D frontier
  - Identifying and working with needs.
- Risk in focusing on either of the ‘pure’ form of both.
- Put all eggs in one basket we risk being excellent at invention but without turning our ideas into successful innovations.

Framework for Innovation Sources: Timing

- At different stages in the product or industry life cycle the emphasis may be more or less on push or pull.
- mature industry tend to focus on pull- respond to different market needs & differentiating by incremental innovation in key direction of user need.
- A new industry –emergent industry is often about solutions looking for a problem.
- a different balance of resources committed to push or pull within these different stages.

Framework for Innovation Sources: Adoption and Diffusion?

- Diffusion- the adoption and elaboration of innovation over time.
- Innovation adoption take place gradually over time
- Lead users and early adopters are likely to be important sources of ideas and variations which can help shape an innovation in its early life
- Early and late majority will be more a source of incremental improvement ideas.

Top Ten Causes of Innovation Failure

1) Unrealistic expectations from top management regarding resources and the time really required in achieving innovation
2) Lack of resources allocated in budget, people, infrastructure
3) Too much focus on products and technology and ignoring the other options within innovation, such as service, business model, platform collaborations etc.
4) People or teams operate in silo's instead of broader collaborative approaches
5) Wrong personnel are in place to make innovation happen
6) A poorly defined innovation strategy and poorly defined business goals
7) Lack of innovation strategy
8) Over emphasis on idea generation and not on execution
9) Lack of external partners involvement
10) Poor management of the innovation process

http://www.innovationexcellence.com/blog/2011/05/11/10-practical-tips-on-making-innovation-happen/

10 Practical Tips on Making Innovation Happen

1) Meet the corporate innovators.
2) Get personally committed.
3) Expand the horizon.
4) Maintain the overview.
5) Create a learning culture.
6) Become a better networker.
7) Go beyond the usual suspects.
8) Break down corporate rules and procedures
9) Ask more questions. Be more curious.
10) Check if you are on track.

Seven Sources for Innovative Opportunities

- Within the enterprise or industry
  - ***Unexpected Occurrences***
  - ***Incongruities***
  - ***Process Needs***
  - ***Industry and Market Changes***

- Outside the entreprise or industry
  - ***Demographic Changes***
  - ***Perceptual Changes***
  - ***Knowledge-Based Concepts (both scientific and non-scientic)***

Types Of Innovation

- Invention
- Extension
- Duplication
- Synthesis

Which Type Of Innovators Are You?

- Gatekeepers
- Idea Generators
- Champions
- Project Managers
- Coaches