



INNOVATION – PERSPECTIVES, STEPS, STRATEGIES

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27 Feb 2013



**Warm
Welcome!**

"I Keep Six Honest Serving Men ..."

Rudyard Kipling

*I KEEP six honest serving-men
(They taught me all I knew);
Their names are What and Why and When
And How and Where and Who.
I send them over land and sea,
I send them east and west;
But after they have worked for me,
I give them all a rest.*

From 'The Elephant's Child'

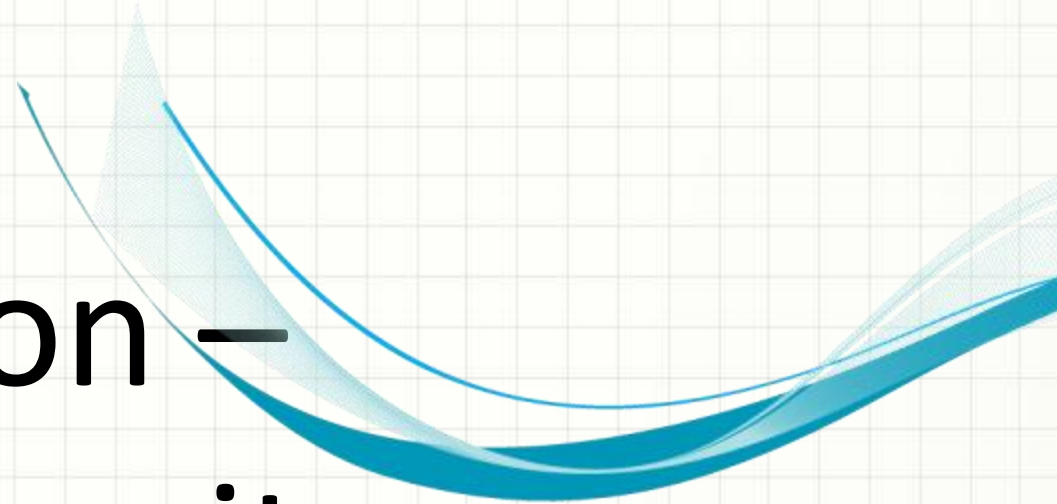
Let us use these men effectively to do our best!

What's in it for me?

- If you are a student, professional, educationalist or businessman all of us can 'Innovate' and make a difference.
- Discusses different perspectives of Innovation, how to nurture innovation and applying these in furthering careers both as individual as well as professional.
- *Innovative thinking can shape your future!*

Disclaimer

- The perspectives are compiled from various sources included in references
- The material represents compiled opinion by the individual and reflects his personal opinion on the same.
- The material doesn't necessarily reflect the opinion of his employer.



Innovation – What does it mean to you?

“Innovation is becoming a part of public discussions. However, the term ‘innovation’ is often used in the narrow context of short term or temporary solution which could be considered a ‘work-around’ “

*“Shaping the National Innovation System: The Indian Perspective” by
Yagnaswami Sundara Rajan, Indian Space Research Organization*

Here we attempt to place Innovation in the long term perspective!



Perspectives of

1. Economist

2. Management Scholar

Innovation-Perspectives

*“the first commercial use of a product or process that hadn’t previously been exploited.” - **Joseph Schumpeter***

*“Generally speaking, innovation may be viewed from at least two vantage points: (1) newness, in the sense that something has never been done before, and (2) newness, in the sense that something has not been done before by the industry or company now doing it.” -**Theodore Levitt***

*“Its [innovation’s] criterion is not science or technology, but a change in the economic or social environment, a change in the behavior of people as consumers or producers, as citizens, as students, or as teachers, and so on. Innovation creates new wealth, or new potential for action, rather than new knowledge.” -**Peter Drucker***

Innovation- A definition?

Edward B. Roberts

The first generalization is: innovation = invention + exploitation.

The innovation process covers all efforts aimed at creating new ideas and getting them to work.

The exploitation process includes all stages of commercial development, application and transfer, including the focusing of ideas or inventions toward specific objectives, evaluating these objectives, downstream transfer of research and/or development results, and eventual broad-based utilization, dissemination and diffusion of technology-based outcomes.

I submitted my idea and I'm done!

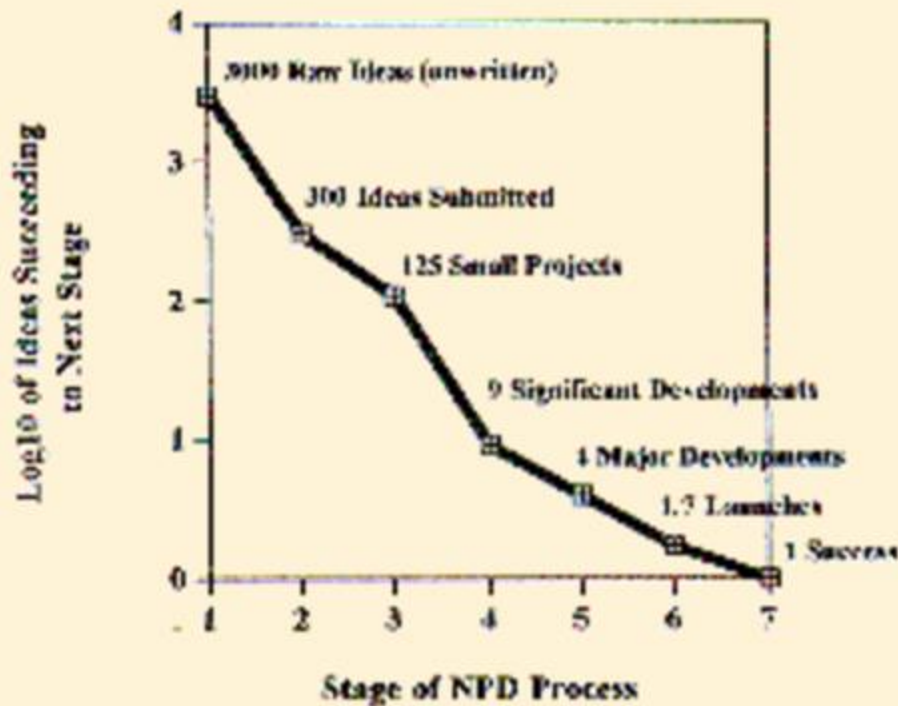


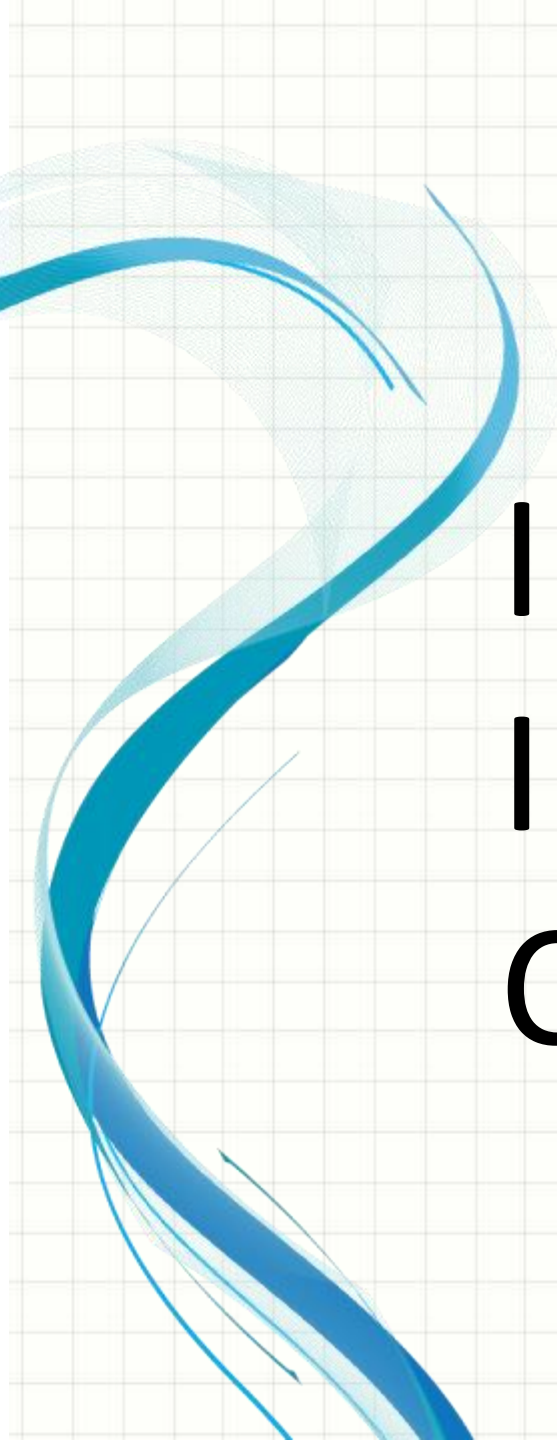
Figure 1. "Universal" Industrial Success Curve for Substantially New Products

Levitt:

"The trouble with much creativity today is that many people with the ideas have the particular notion that their jobs are finished when they suggest them: that it is up to somebody else to work out the dirty details and then implement the proposals. Typically, the more creative the man, the less responsibility he takes for the action."

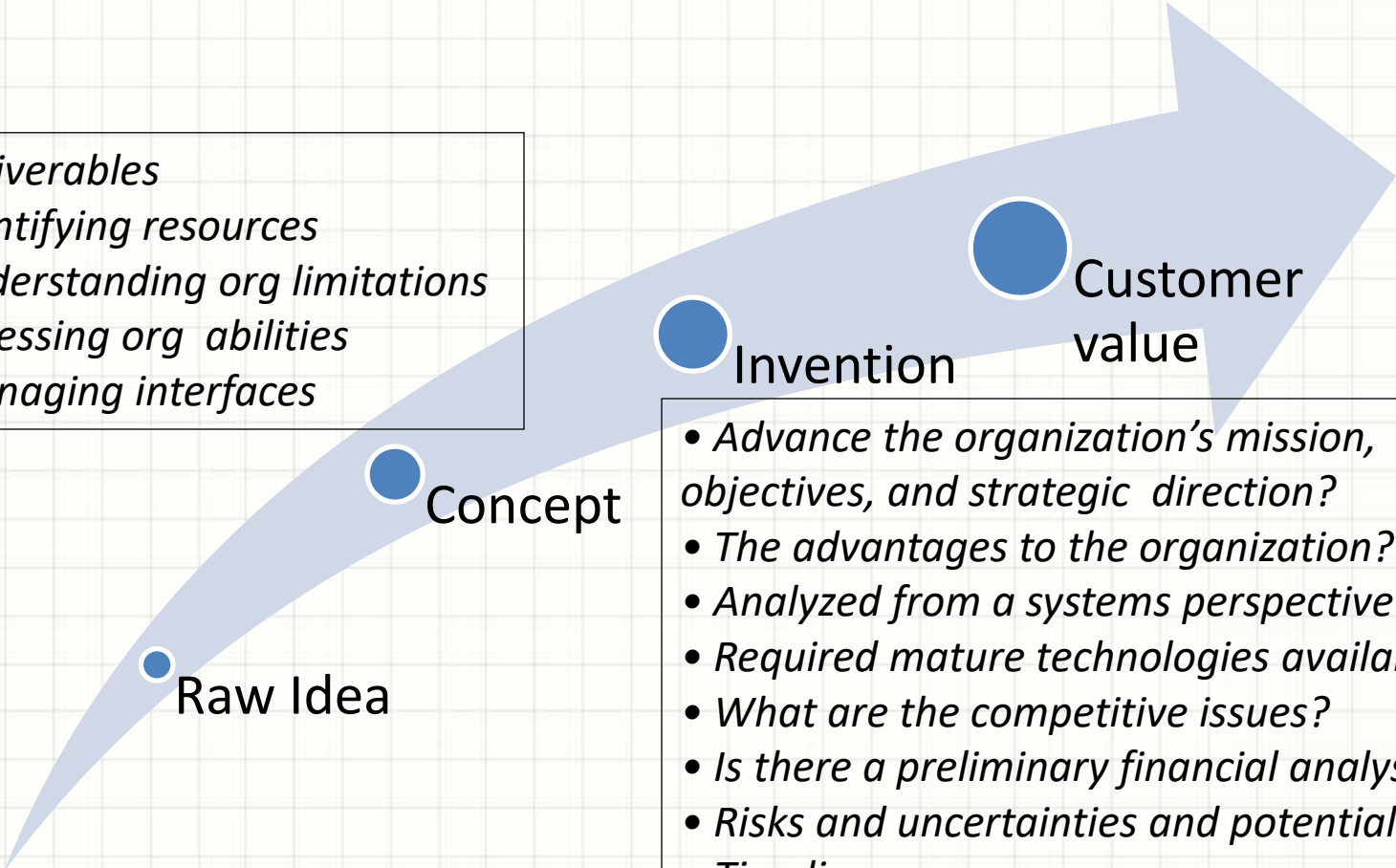
3000 raw ideas = 1 commercial Success!
(Greg A. Stevens and James Burley)

Source: WinOvation.org

A decorative graphic on the left side of the slide, consisting of a thick blue wavy line that curves upwards and then downwards. It is surrounded by lighter blue, semi-transparent wavy lines and small arrows pointing in the direction of the flow.

Innovation=
Invention +
Commercialization

The steps involved in Innovation

- 
- *Deliverables*
 - *Identifying resources*
 - *Understanding org limitations*
 - *Assessing org abilities*
 - *Managing interfaces*

Raw Idea

Concept

Invention

Customer value

- *Advance the organization's mission, objectives, and strategic direction?*
- *The advantages to the organization?*
- *Analyzed from a systems perspective?*
- *Required mature technologies available?*
- *What are the competitive issues?*
- *Is there a preliminary financial analysis?*
- *Risks and uncertainties and potential failures*
- *Timeline*

Invention

Gifford Pinchot III:

Invention is the act of genius in creating a new concept for a potentially useful new device or service. In innovation, that is just the beginning. When the invention is done, the second half of innovation begins: turning the idea into a business success.

Where do ideas come from?

- Brainstorming
- Creative People
- Customers
- Problem Finders





INNOVATION REQUIRES YOU TO PLAY INTEGRATOR ROLE

***‘PUT IT ALL TOGETHER’
COMPETENCE***

How creative are we? (in India/Asia)

1. *Global Innovation Index rates India at 64 in rankings.*
2. *Global Innovation Efficiency Index rates India No.2 due to reading habits, mathematics and science (69th) and creative goods exports (7th)*
3. *Indians or Asians are gifted by intuitive thinking –Steve Jobs*



Sources :

<http://www.globalinnovationindex.org/gii/GII%202012%20PPT.pdf>

Steve Jobs by Walter Isaacson

I don't have the resources to do it?

What resources do you need?

Material

IEEE COMSOC Magazines

IEEE CS Magazines

ISA InTech Magazine

Technology Review Top Innovators List

<http://www.technologyreview.in/tr35/>

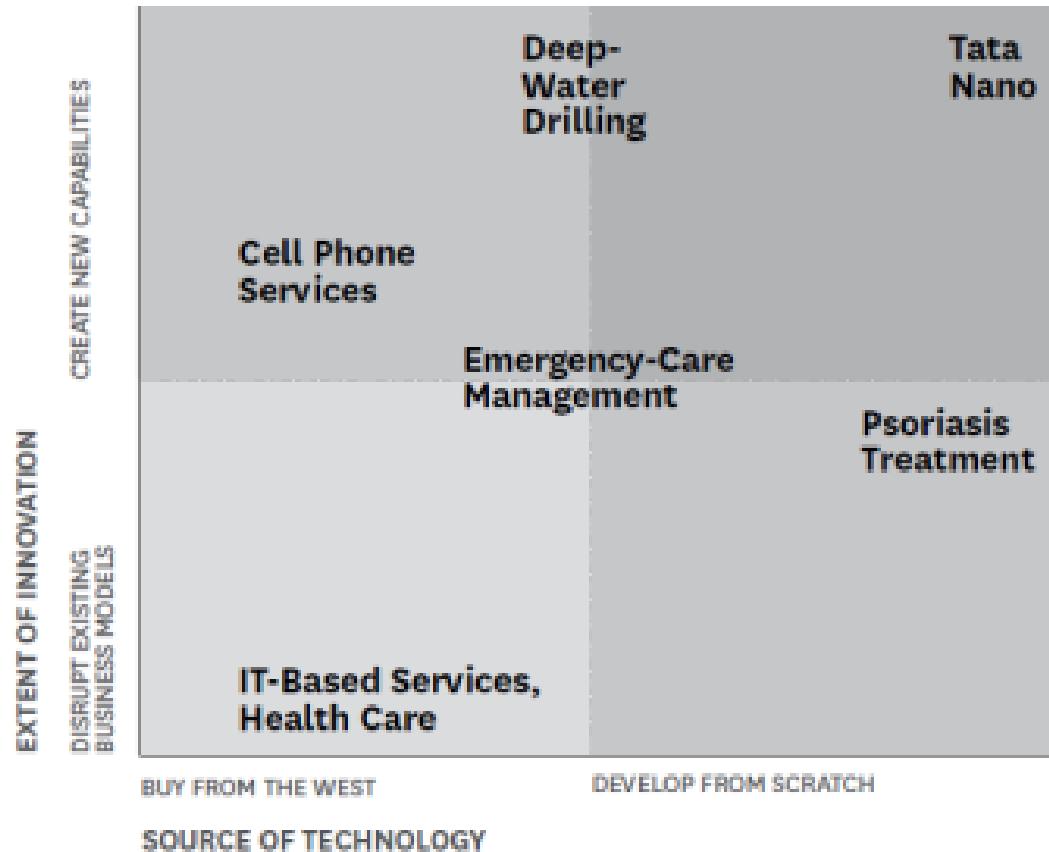
Indian Innovators – National Innovation Foundation

http://www.nif.org.in/dwn_files/rajasthan/PART-III.pdf



Note that Mansukhbhai Prajapati didn't have huge funding for his product Mitticool!

Three kinds of innovation



- *Change Business Dynamics*
- *Synthesize Technologies*
- *Create new Technologies*

Important: Not everywhere we need to develop from scratch!

Source : Innovation's Holy Grail , Harvard Business Review

Principles of Jugaad – a strategy

1

- See opportunity in adversity

2

- Do more with less

3

- Think & act flexibly

4

- Keep it simple

5

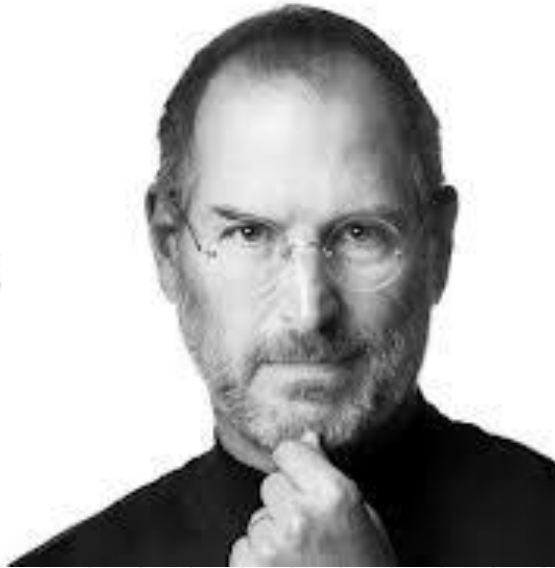
- Include the margin

6

- Follow your heart

Case study of an *'Innovator'*

Steve Jobs
1955-2011



- *iPod in 2001*
- *Apple Stores 2001*
- *iTunes and Music Store 2003*
- *iPhone 2007 (Multi touch keypad)*
- *iPhone for Apps 2008*
- *Driven by intuition*
- *Open to failure and experiments*
- *Keep it simple*
- *Followed his heart!*

Sir Jagadish Chandra Bose



- *Acharya Sir Jagadish Chandra Bose, CSI, CIE, FRS was an Indian polymath: a physicist, biologist, botanist, archaeologist, as well as an early writer of science fiction.*
- *IEEE named him one of the fathers of radio science.*
- *First person from the Indian subcontinent to receive a US patent, in 1904. He also invented the Crescograph.*
- *He used Crescograph, to measure plant response to various stimuli, and thereby scientifically proved parallelism between animal and plant tissues.*
- *Foundation of experimental Science in India*
- *J.C. Bose, 'Response in the Living and Non-living'*

Dr. Verghese Kurien



- *"Father of the White Revolution" or "Milkman of India" A social innovation*
- *A key achievement at Amul was the invention of milk powder processed from buffalo milk (abundant in India), as opposed to that made from cow-milk, in the then major milk producing nations.*
- *Amul a co-operative model*

Tata Nano and Ratan Tata

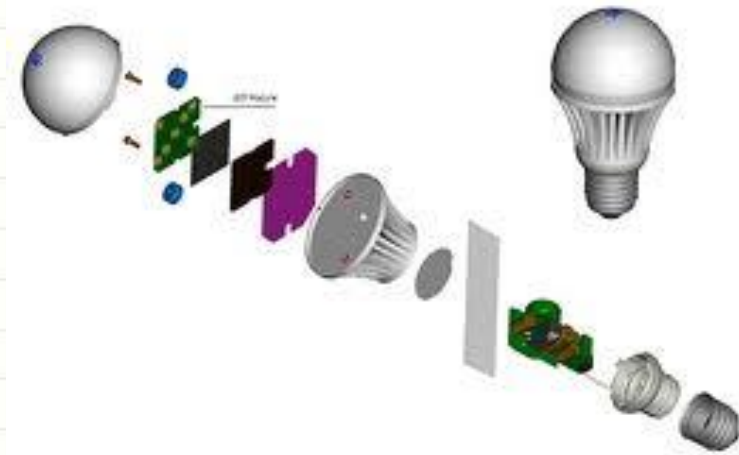


- *It was a team work and an example of end to end innovative spirit!*
- *The styling of the Nano – Italian Design team IDEA*
- *New Product Introduction (NPI) process introduced based on Warwick Manufacturing Group (UK) from Warwick University*
- *Singur to Sanand*
- *37 Patent Applications and 31 design applications*
- *Engineers from team called on stage at the launch!*

Case Studies & Discussion

"The best innovators systematically use old ideas as the raw materials for one new idea after another. They use their in-between vantage point to spot old ideas that can be used in new places, new ways, and new combinations."

The best companies are good at capturing good ideas, keeping ideas alive, imagining new uses for old ideas, and putting promising concepts to the test “ Andrew Hargadon and Robert I. Sutton , "[Building an Innovation Factory](#)", Harvard Business Review



*-Dissecting existing
Inventions/Innovations!*

Resources

- “Doing Innovation: Creating Economic Value - Perspectives on Innovation”, by Gerard H. (Gus) Gaynor , IEEE USA
- Jugaad Innovation : <http://jugaadinnovation.com/>
- [“Innovation’s Holy Grail”](#) –C.K. Prahalad and R.A. Mashelkar, Harvard Business Review
- National Innovation Foundation: <http://www.nif.org.in/>
- Global Innovation Index : <http://www.globalinnovationindex.org/gii/>
- “Small Wonder: The Making Of The Nano” by Sujata Agrawal, Philip Chacko, Christabelle Noronha, Westland Limited
- [“Building an Innovation Factory”](#), Andrew Hargadon and Robert I. Sutton, Harvard Business Review