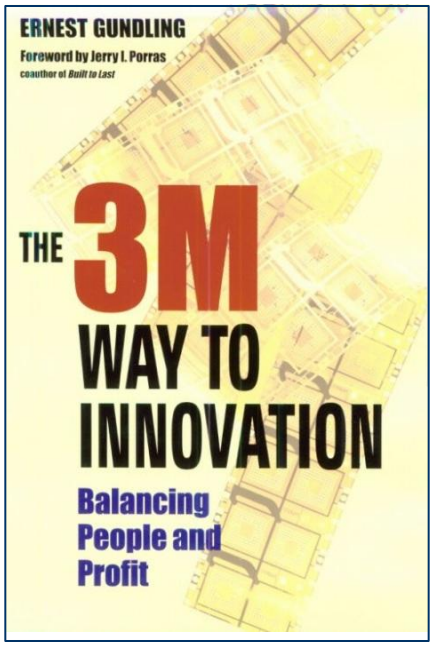
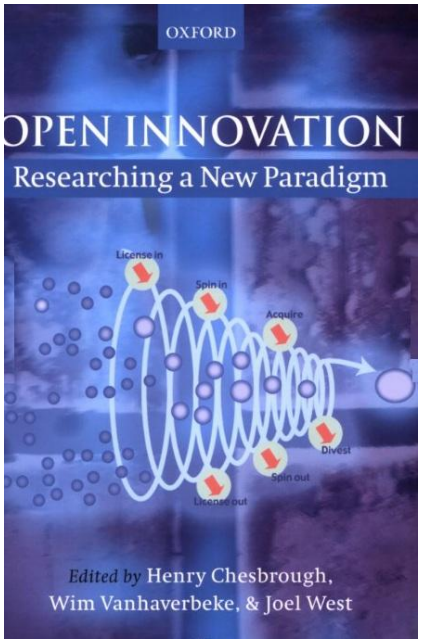
Innovation Organisations: The 3M Way

Damian Gordon

Recommended Reading






3M

3M

- formerly known as the **Minnesota Mining and Manufacturing** Company
- Founded on the North Shore of Lake Superior at Two Harbors, Minnesota in 1902
- With over 76,000 employees they produce over 55,000 products, including: adhesives, abrasives, laminates, passive fire protection, dental products, electrical materials, electronic circuits and optical films

Richard Drew

- June 22, 1899 – December 14, 1980
- American inventor who worked for 3M in St. Paul, Minnesota, where he invented;
  - Masking tape,
  - Cellophane tape, and
  - Duct tape.

Masking Tape

- In 1923 3M employee Richard Drew visited an auto-repair shop in St. Paul, Minnesota.
- 3M produced and sold sandpaper and Drew was in the shop to test out a new batch.

Masking Tape

- When he entered the shop employees were expressing disappointment at a failed attempt to paint a car in the two-tone style that was becoming popular at the time.

Masking Tape

- Typically how the effect was achieved was by painting part of the car in one colour while covering the other parts with butcher paper
- The butcher paper was usually held in place with a heavy adhesive tape.
- Unfortunately, removing the adhesive tape peeled away part of the paint job.

THE IMPORTANT BIT:

- Rather than just sympathise with his customers and move on, Drew decided to do something about it.

Masking Tape

- His company 3M had a lot of know-how in creating adhesives from making sand paper, so Drew figured he would try to make a paper tape to help solve his customer's problems.
- Drew began experimenting with a range of materials and manufacturing processes to solve this problem.

William McKnight

- 11 November 1887 – 4 March 1978
- Businessman who served his entire career in the 3M corporation.
- McKnight encouraged 3M management to delegate responsibility

Masking Tape

- Eventually the then-president of 3M, William McKnight, noticed that Drew was spending time on money on this unofficial project.
- McKnight asked Drew to return to his actual job, improving sandpaper
- But Drew persisted, diverting funds and time to work on abrasives
- McKnight eventually realised this, but did nothing

Masking Tape

- In 1925 Drew managed to create Masking Tape.
- This product has sold in the millions for 3M in the past 70 years.
- And this was just the start of creating an innovation culture in 3M
- William McKnight learned his lesson from Richard Drew

William McKnight

- McKnight's greatest contribution was as a business philosopher, since he created a corporate culture that encourages employee initiative and innovation.
- *As our business grows, it becomes increasingly necessary to delegate responsibility and to encourage men and women to exercise their initiative. This requires considerable tolerance. Those men and women, to whom we delegate authority and responsibility, if they are good people, are going to want to do their jobs in their own way. Mistakes will be made. But if a person is essentially right, the mistakes he or she makes are not as serious in the long run as the mistakes management will make if it undertakes to tell those in authority exactly how they must do their jobs. Management that is destructively critical when mistakes are made kills initiative. And it's essential that we have many people with initiative if we are to continue to grow.*


3M

3M

- McKnight's philosophy had a profound effect on the way 3M does business.
- 15% of all employee's time is allowed to be on their pet projects (the "3M Way").
- Yet there is a clear a tension between innovation and efficiency.
- Why? because innovation usually challenges existing procedures and norms.

James McNerney

- For example, in 2001 James McNerney became the CEO of 3M he sacked 8,000 workers (about 11% of the workforce), intensified the performance-review process, and tightened the purse strings.
- He also introduced the Six Sigma approach to decrease production defects and increase efficiency.
- He changed the Research and Development processes to make them more efficient.
- He increased profitability, but reduced innovation.

Michael Mucci

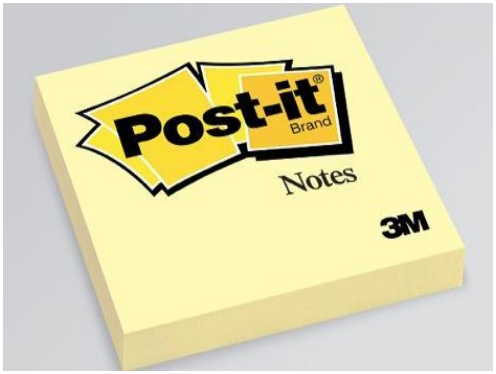
- Early during the Six Sigma effort, after a meeting at which technical employees were briefed on the new process, "*we all came to the conclusion that there was no way in the world that anything like a Post-it note would ever emerge from this new system*," says Michael Mucci, who worked at 3M for 27 years before his dismissal in 2004.
- Mucci has alleged in a class action that 3M engaged in age discrimination; the company says the claims are without merit.

George Buckley

- In 2005 when George Buckley took over as CEO of 3M he quickly rolled back several of McNerney's initiatives.
- He made the Six-Sigma approach *optional* for many departments (his view is that 6σ can become an end unto itself)
- He significantly increased R+D budgets.
- He also increased spending on research into innovating their existing products.

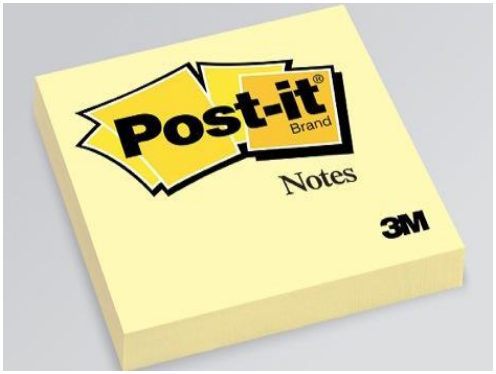

Post-it®
Brand
Notes
3M

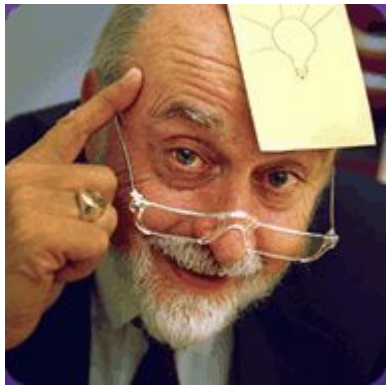
Spenser Silver



- Born 1941
- co-creator of the Post-it note
- In 1966, earned a doctorate in organic chemistry from the University of Colorado in 1966, before taking a position as a Senior Chemist in 3M's Central Research Labs.

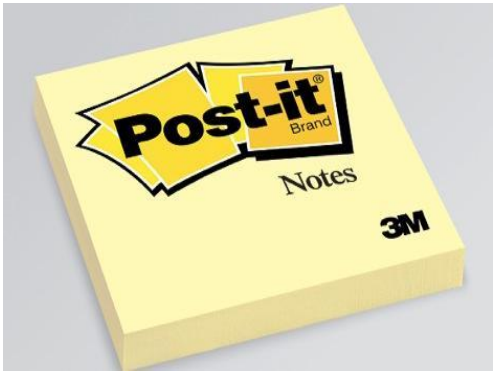
Arthur Fry





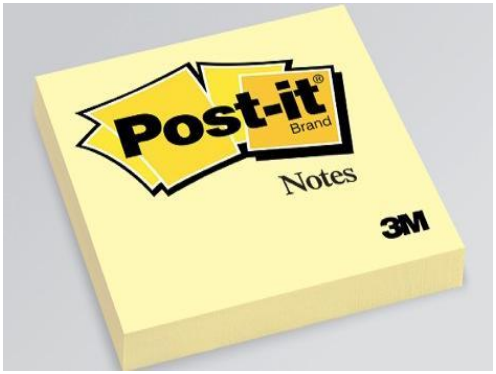
- Born 1931
- co-creator of the Post-it note
- In 1953, while still enrolled in undergraduate school, Fry took a job at 3M (then it was still called Minnesota Mining and Manufacturing Company) as a new product development researcher. He worked in new product development throughout his career at 3M until his retirement in the early 1990s.

Post-It Note



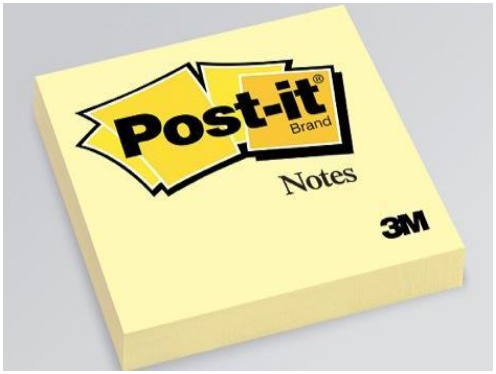
- In 1968, Spencer Silver (with the help of Jesse Kops) accidentally developed a "low-tack", reusable pressure sensitive adhesive.
- For five years, Silver promoted his invention within 3M, both informally and through seminars, but without much success.
- He was unable to find a marketable use for his invention.

Post-It Note



- In 1974, Arthur Fry attended a seminar given by Silver asking for ideas for his adhesive.
- Fry sang in his church choir on weekends, and he used slips of paper to mark the pages of his hymnal. When the book was opened, however, the makeshift bookmarks often moved around or fell out altogether.
- It occurred to him that Silver's adhesive could be put to use to create a better bookmark. If it could be coated on paper, Silver's adhesive would hold a bookmark in place without damaging the page on which it was placed.

Post-It Note



- Until the 1990s, when the patent expired, Post-it Brand notes were exclusively produced by 3M.
- Now other companies produce sticky or repositionable notes, but the term "Post-it" and the canary yellow color are trademarks of 3M.
- Accepted generic terms for competitors include "sticky notes" or "repositionable notes" or "repositional notes."


3M

What 3M does right

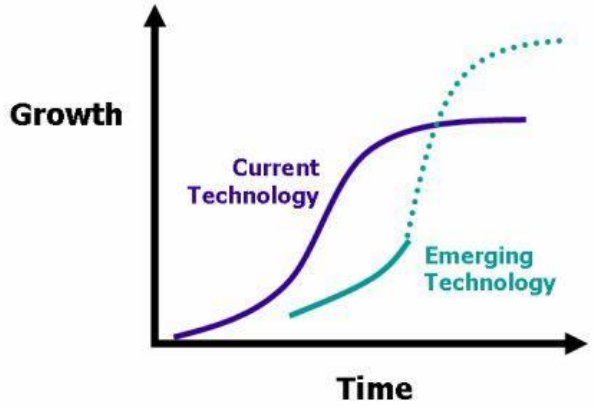
- 15% of all employee's time is allowed to be on their pet projects (the "3M Way").
- The work of outstanding technical employees is recognised by the 3M Carlton Society, this is voted on by peers.
- Employees that create products which sell $4 million or more are awarded the prestigious Golden Step Award
- Employees have a choice to work on a management or laboratory career ladder, no employee is forced to take a management role if the don't wish it.

Innovation – What is it?

Innovation

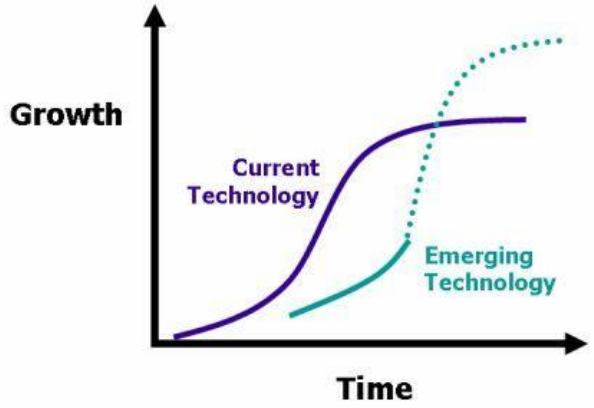
- Following Joseph Schumpeter's 1934 book "*The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*" innovation is distinguished from invention by the fact that innovation is usually applied successfully in practice.

Innovation - Diffusion



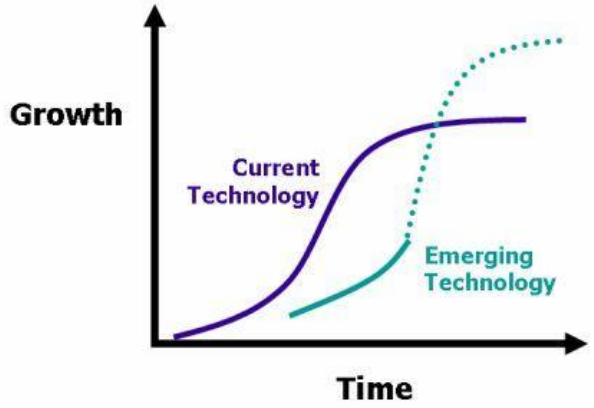
- When innovation occurs, innovations may be spread from the innovator to other individuals and groups.
- This process has been proposed that the life cycle of innovations can be described using the 's-curve' or diffusion curve. The s-curve maps growth of revenue or productivity against time.

Innovation - Diffusion



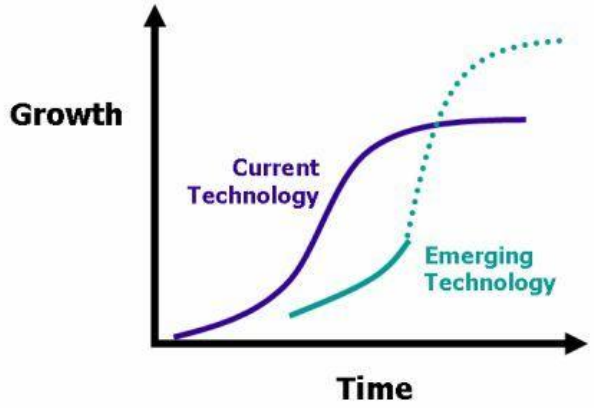
- In the early stage of a particular innovation, growth is relatively slow as the new product establishes itself.
- At some point customers begin to demand and the product growth increases more rapidly.
- New incremental innovations or changes to the product allow growth to continue.
- Towards the end of its life cycle growth slows and may even begin to decline. In the later stages, no amount of new investment in that product will yield a normal rate of return.

Innovation - Diffusion



- The s-curve derives from an assumption that new products are likely to have "product Life". i.e. a start-up phase, a rapid increase in revenue and eventual decline.
- But in fact the great majority of innovations never get off the bottom of the curve, and never produce normal returns.

Innovation - Diffusion



- Innovative companies will typically be working on new innovations that will eventually replace older ones. Successive s-curves will come along to replace older ones and continue to drive growth upwards. In the figure above the first curve shows a current technology. The second shows an emerging technology that current yields lower growth but will eventually overtake current technology and lead to even greater levels of growth. The length of life will depend on many factors.

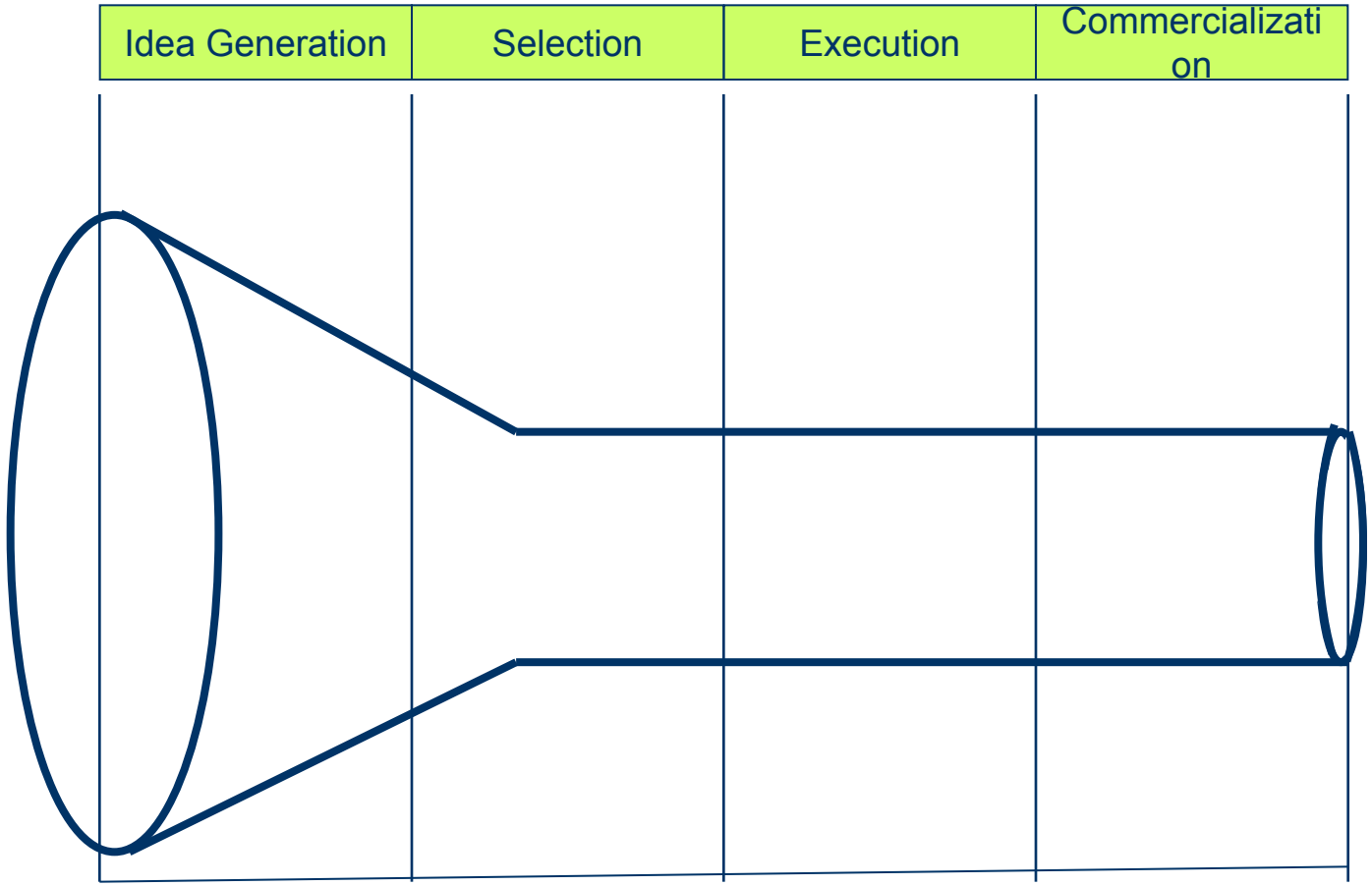
Open Innovation

- Open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology".
- The boundaries between a firm and its environment have become more permeable; innovations can easily transfer inward and outward.

Open Innovation

- The central idea behind open innovation is that in a world of widely distributed knowledge, companies cannot afford to rely entirely on their own research, but should instead buy or license processes or inventions (e.g. patents) from other companies. In addition, internal inventions not being used in a firm's business should be taken outside the company (e.g., through licensing, joint ventures, spin-offs)

Open Innovation



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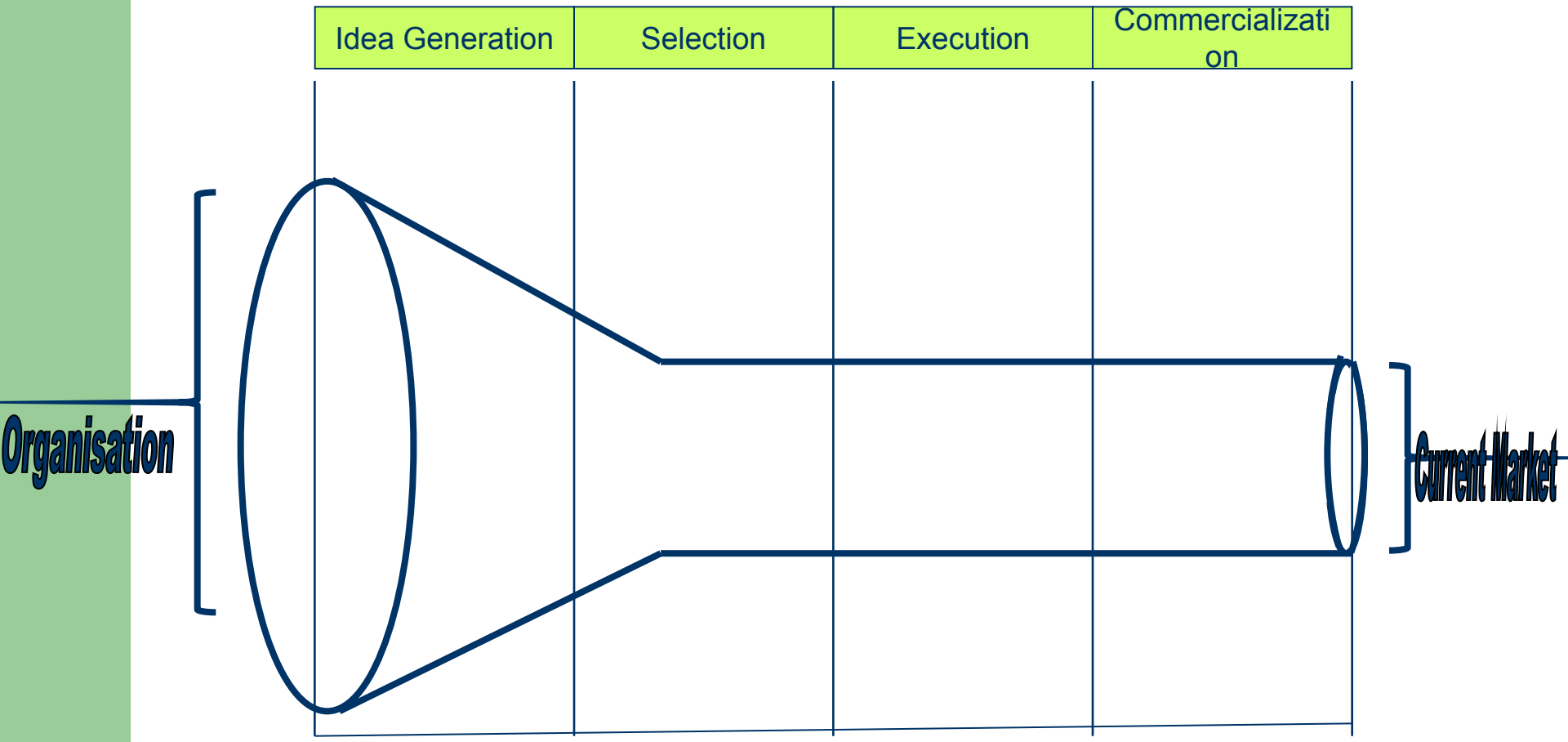

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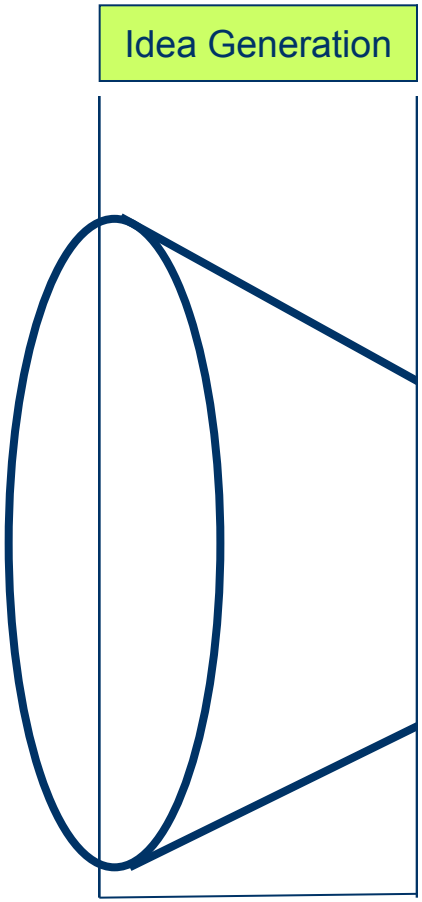

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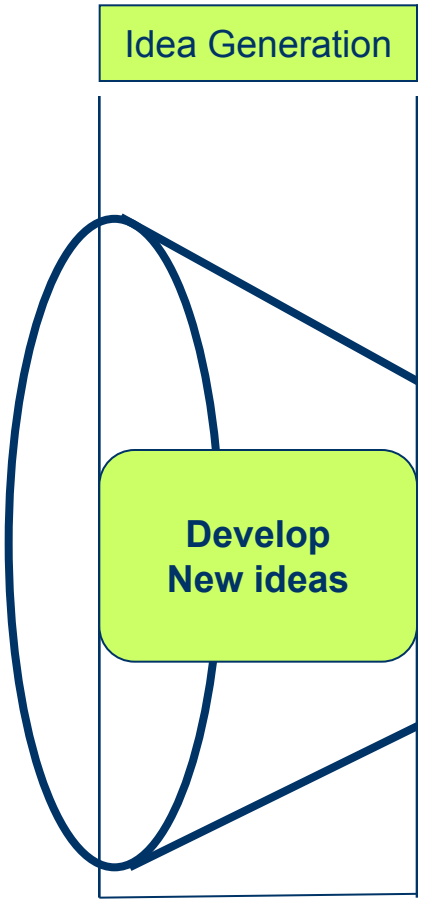

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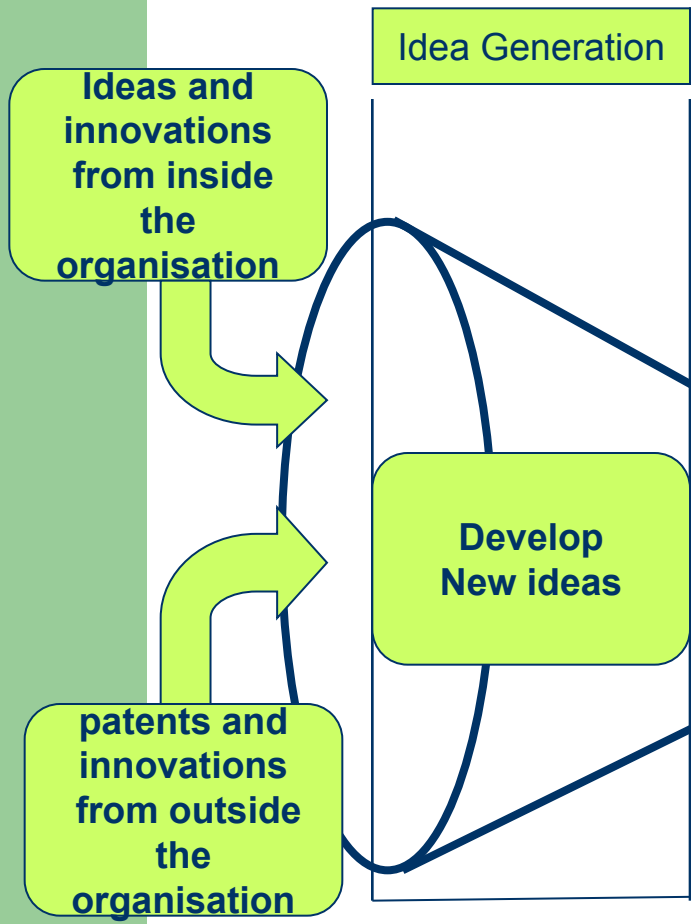

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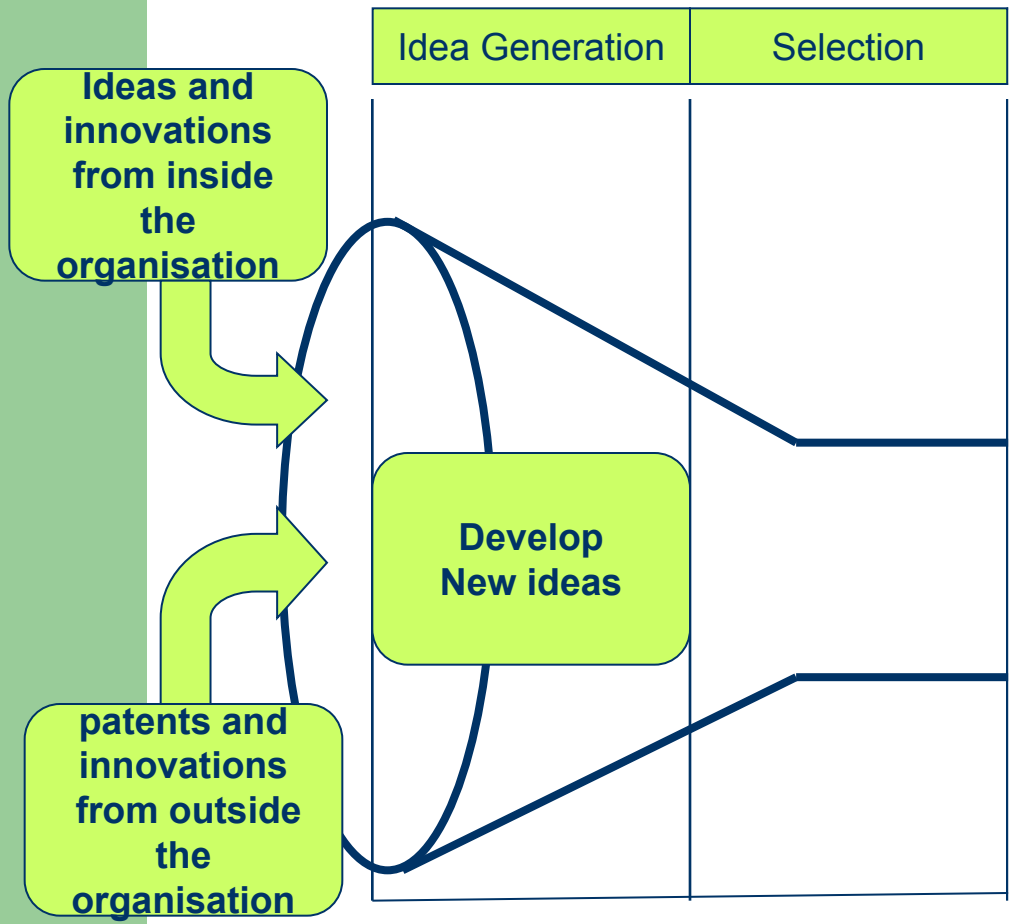

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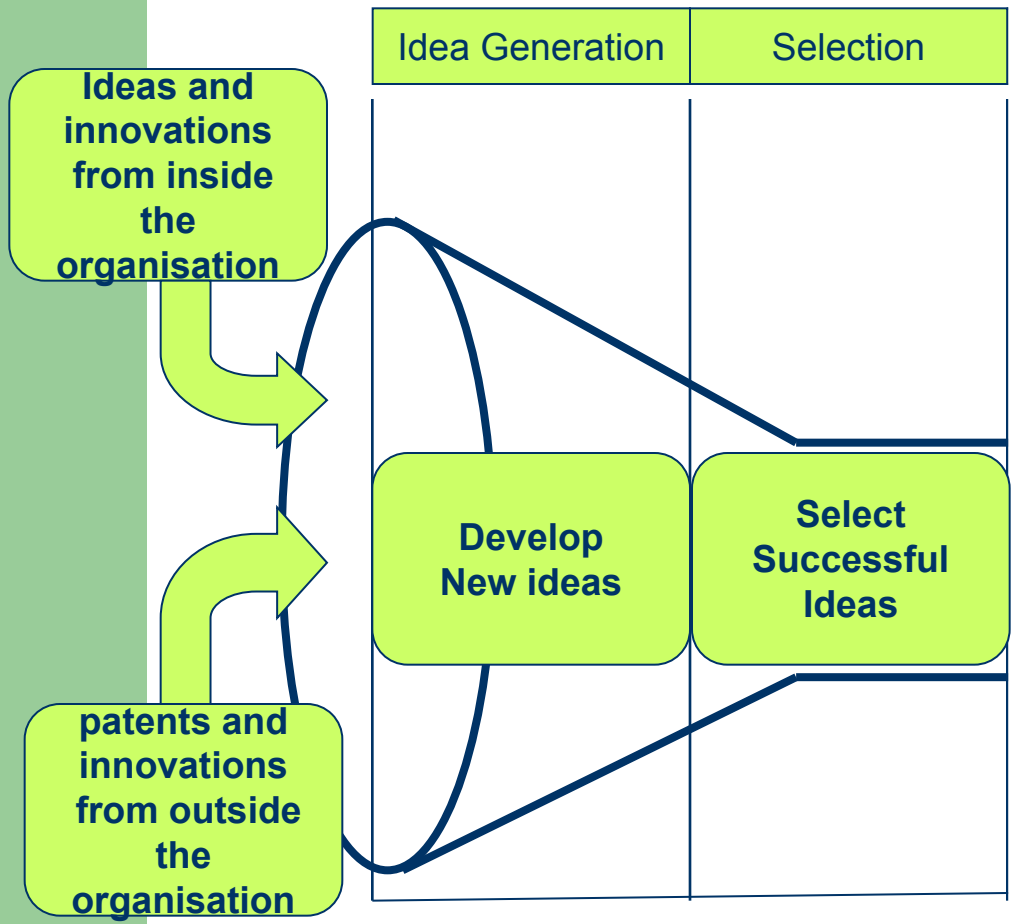

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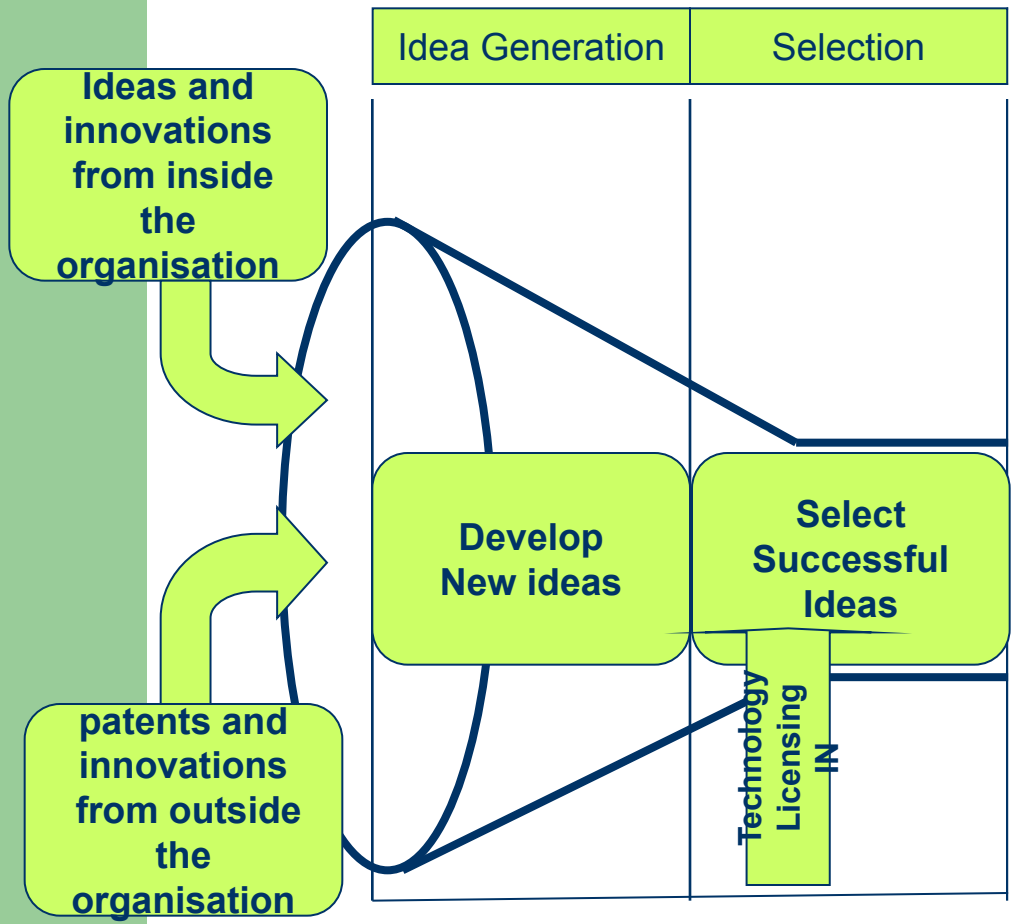

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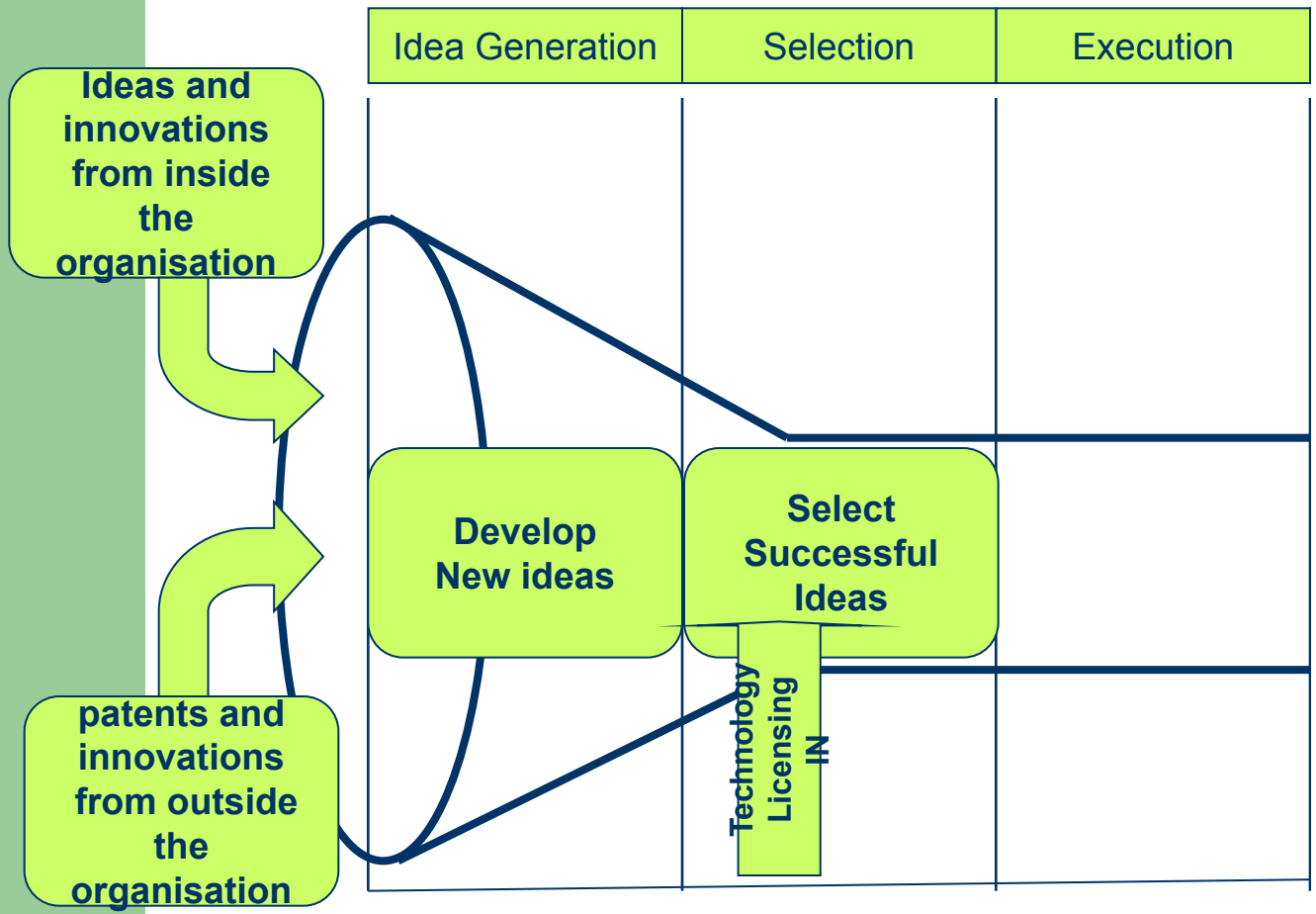

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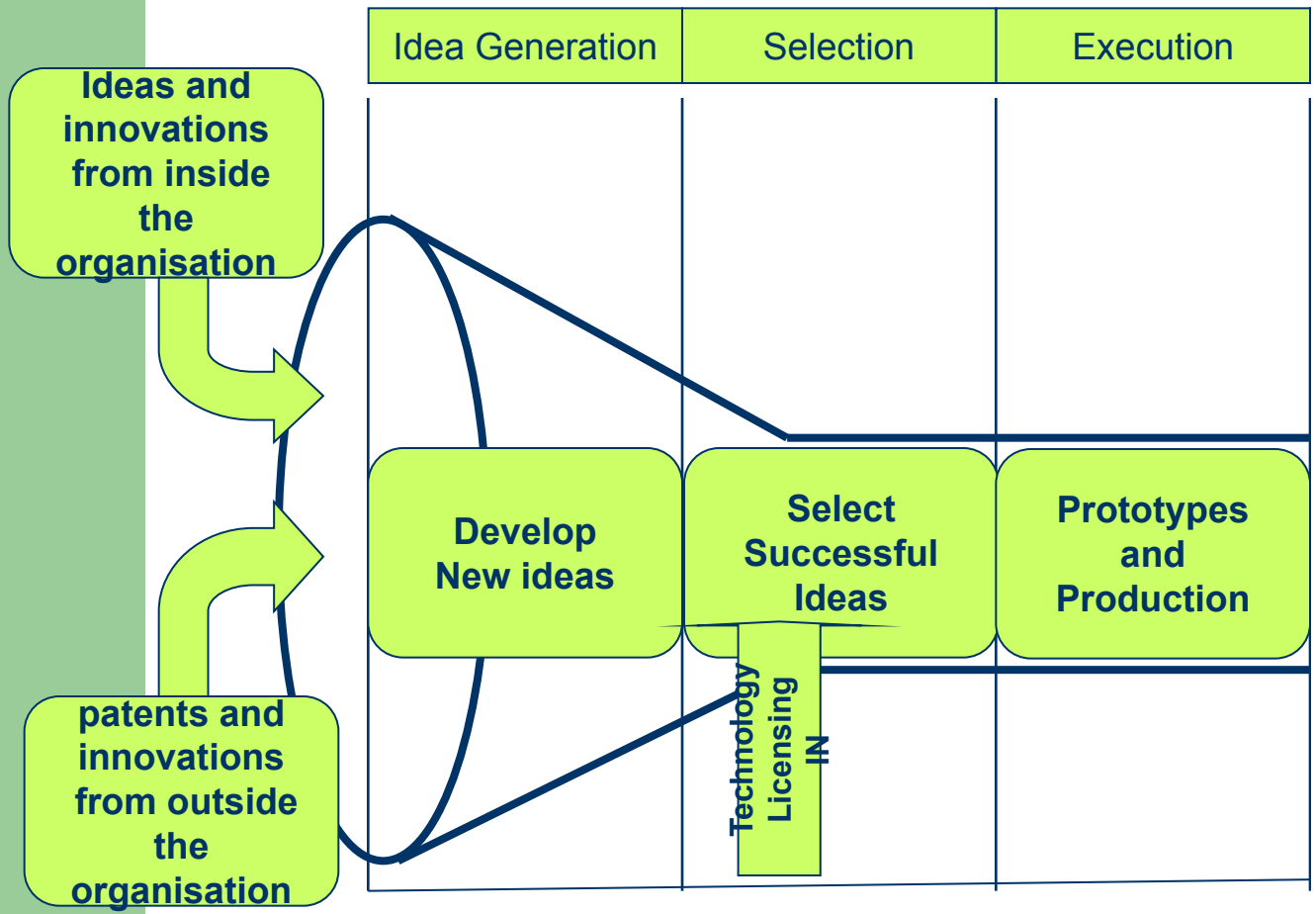

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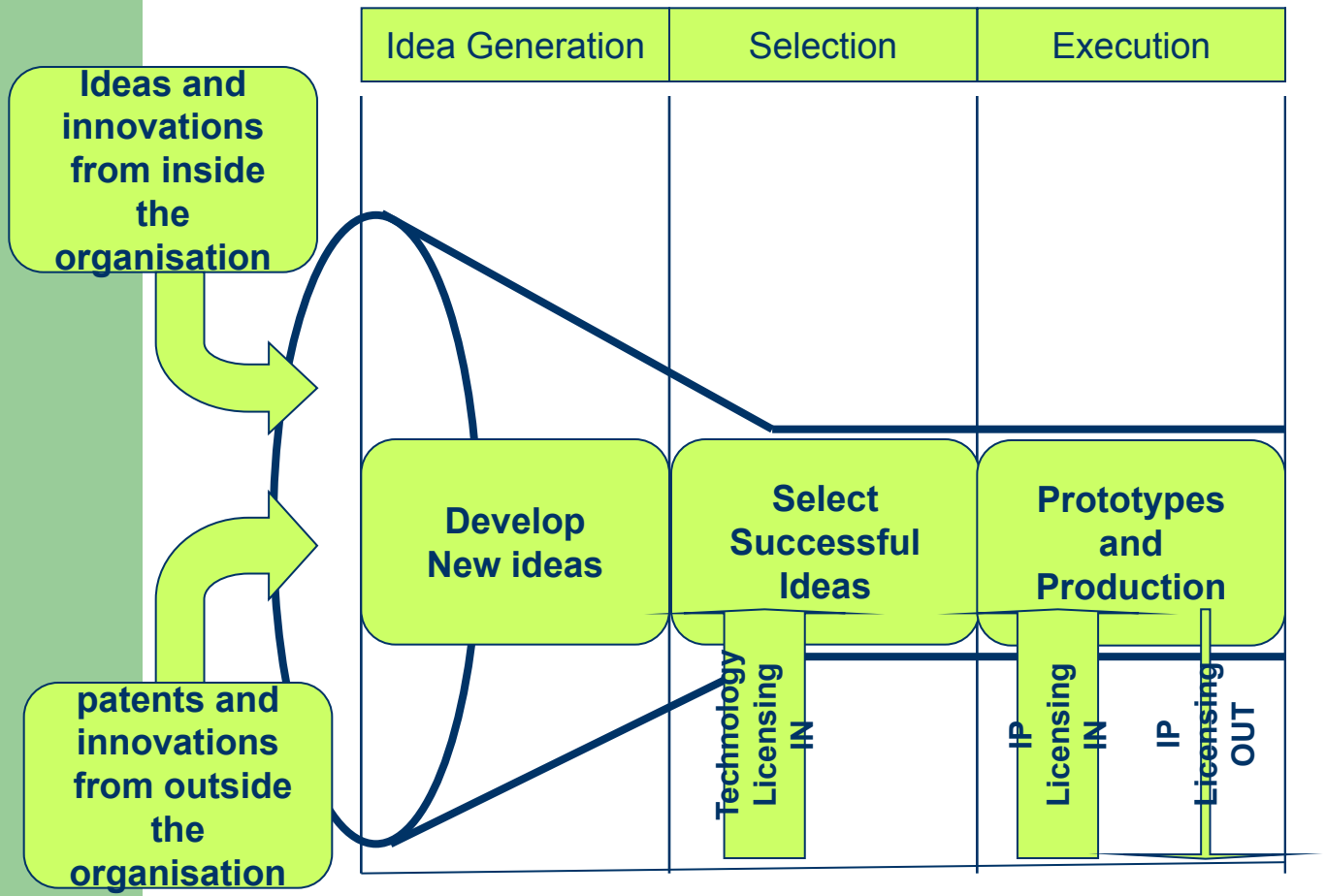

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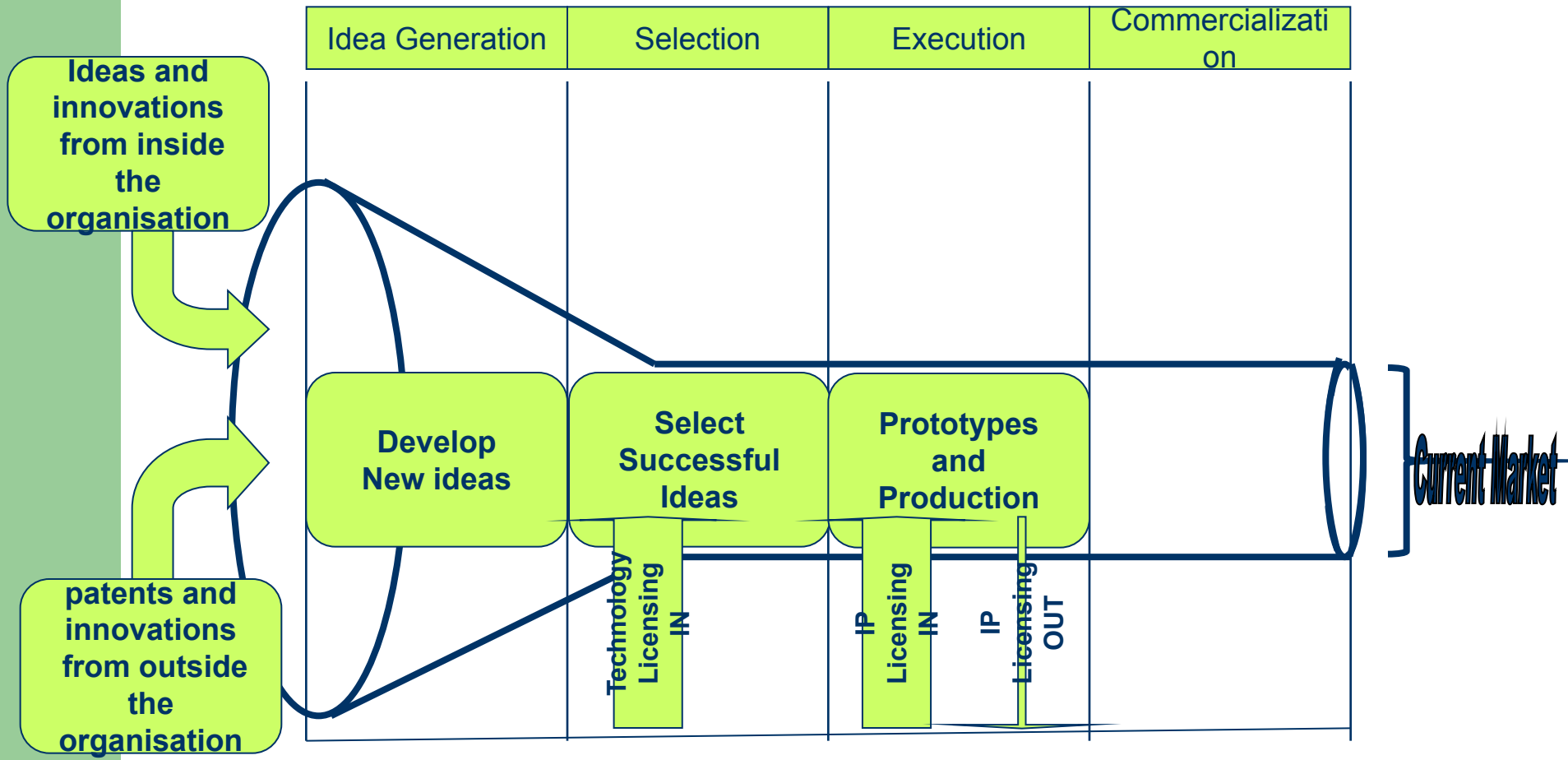

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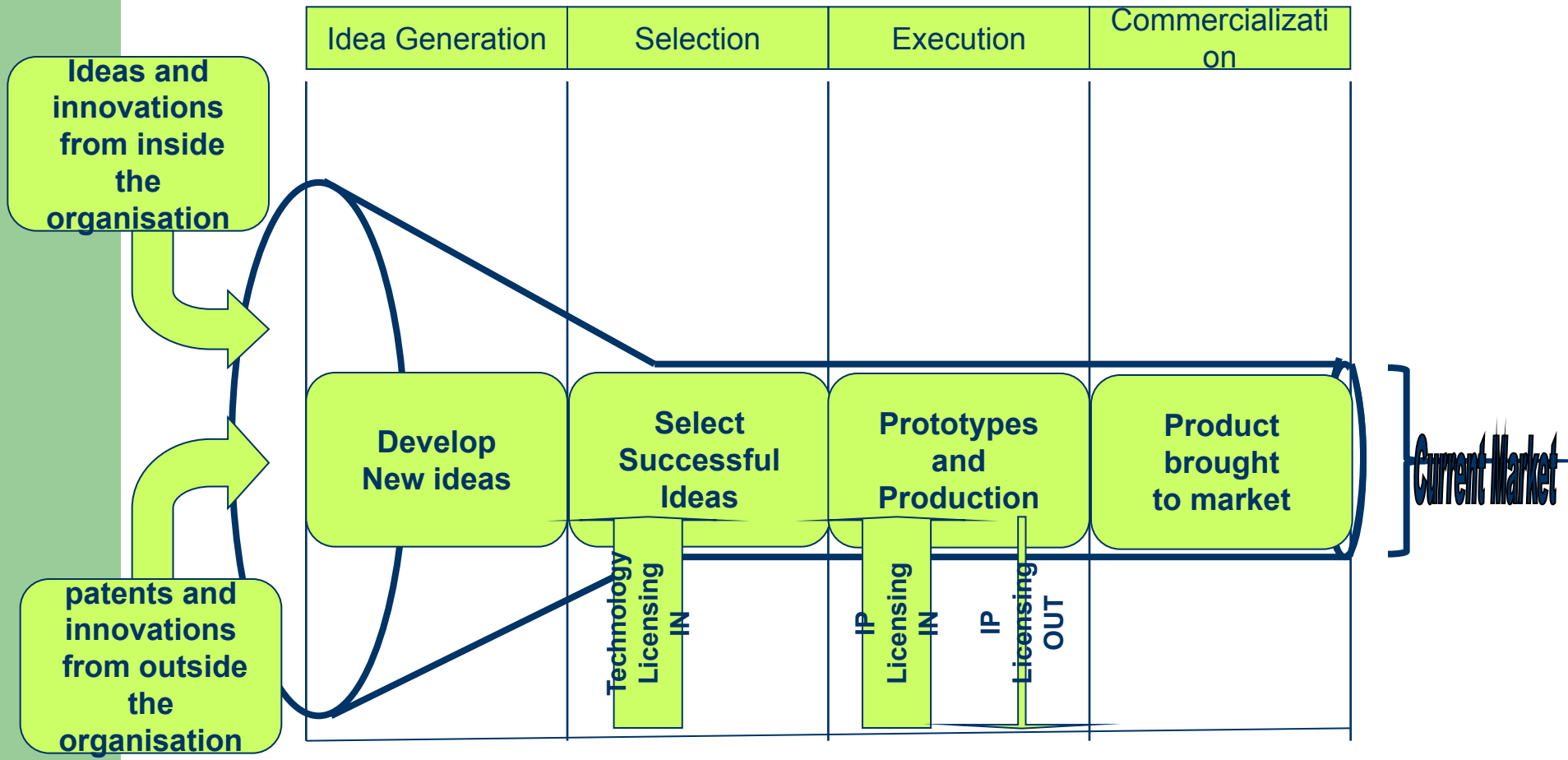

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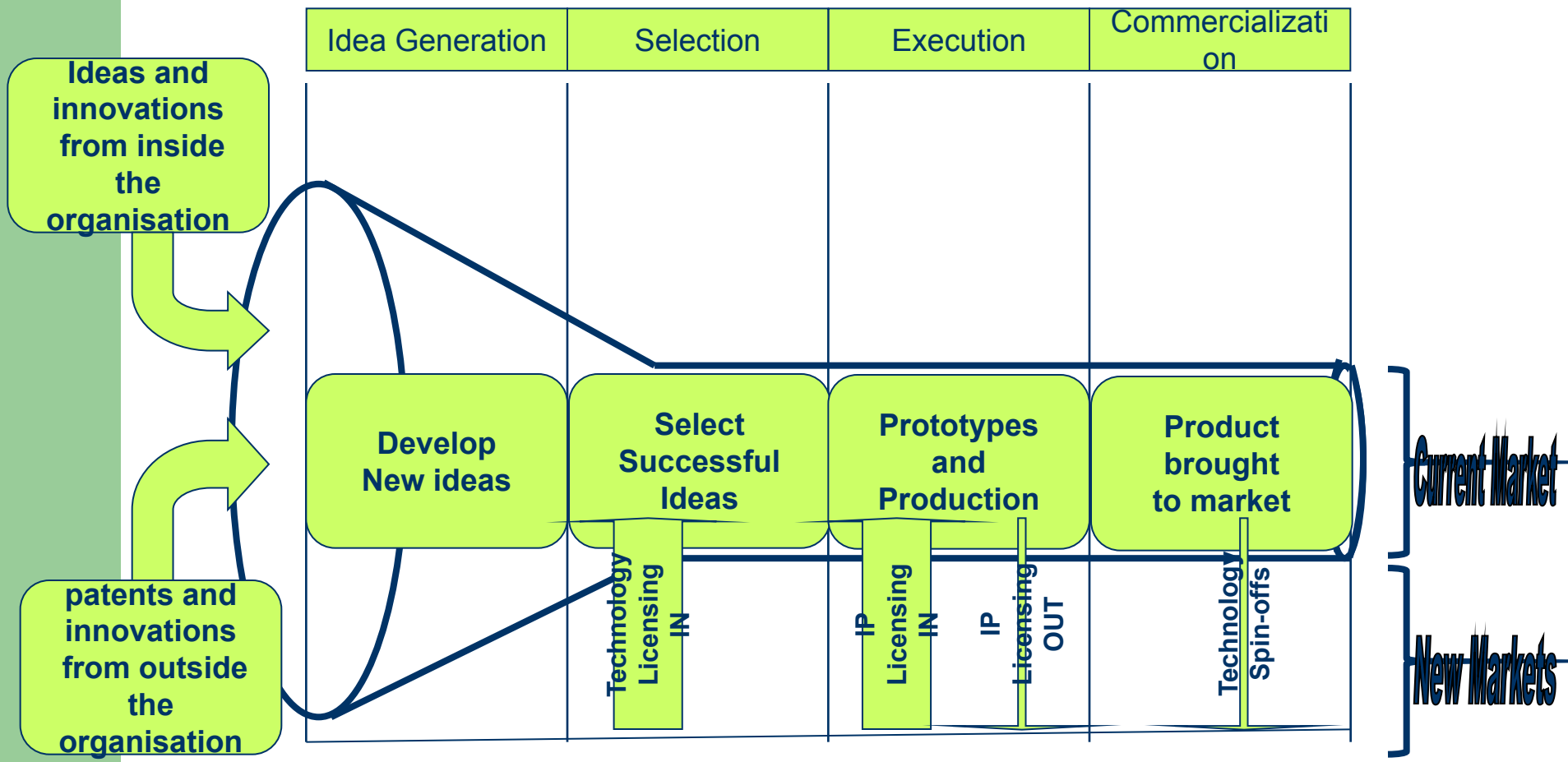


3M