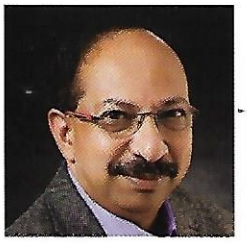
DEMYSTIFYING PRODUCT DEVELOPMENT

This article is not intended to discourage any youngsters from dreaming, but to add two cents to create successful products and perhaps provide insights to enhance the probability of success for many of the fledgling new ventures.



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'Startups' and 'Innovations' are the most used buzzwords by the youngsters in Kerala over the last few years. With over 550 startup ventures incubated over a period of 3 years in Kerala, it was the dream for many millennials to have a startup of their own. Many organisations were built to support such innovations through incubation. There are a few success stories, but not many innovative products seem to have emerged in the recent past. Is it not the apt time to think of the reasons for the current state of affairs, understand the gaps and bridge them, and focus on quality proposals than quantity? This article is not intended to discourage any youngsters from dreaming, but to add two cents to create successful products and perhaps provide insights to enhance the probability of success for many of the fledgling new ventures.

Proposals

Though proposals could be presented in a very impressive manner, it is also not possible for the reviewers to judge such proposals in a committee room. Through the more lenient and supportive policies, it is not difficult to get proposals approved for initial funding. Though my experience of reviewing hundreds of new startup ideas, if one drills down on the idea deep enough, it can be seen that more than half of these ideas are based on some published international papers or are a spinoff off already existing products elsewhere. "Reduced cost" is highlighted in many of the proposals claiming that the product proposed will be at 1/4th of the cost of any existing product. This is purely based on the estimated Bill of Material (BOM) cost. At this point of time, the young innovator is ignorant to the other additional components to take care of regulatory compliances, and additional costs involved to come up with such a commercial product including marketing overheads. Of course, there are many cost effective products brought out through sheer disruptive technologies, but these are few and far in between.

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Innovation

Innovation is defined as the process of translating an idea or invention into a product or service that creates value or for which customers will be willing to pay. The requirement should come first, not the idea. Unless there is a taker for these ideas and products, these can not be branded as innovations. Youngsters are often misled through incomplete research work and get stuck with ideas

and they expect good market for the products they envision.

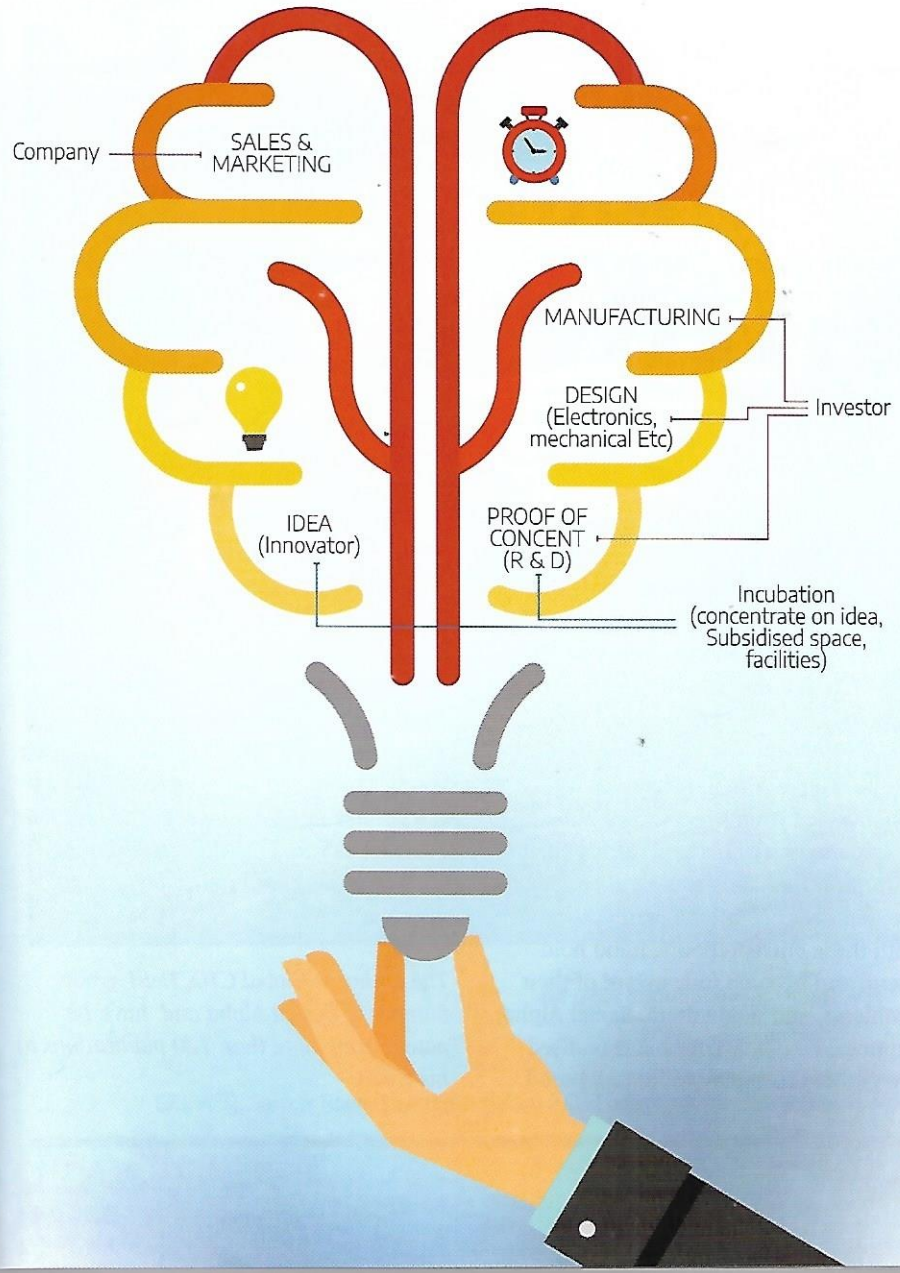
Check List

The below is a typical check list any innovator has to answer before jumping into any development activity:

Originality of the Idea: Is the idea original, or just heard or read from somewhere. Adaptation of ideas are acceptable too, given the right kind of research. It is important that the entrepreneur himself or herself get fully convinced of their ideas.

Prior art Status: Do a thorough literature and patent search to make sure that no one else has done this before, and even if so, fully understand the prior art status. Help of IP attorneys as well as patent wings of organisations can be of great help. The new proposal necessarily needs to be above the prior art, with extra claims.

In addition to the above, a study and analysis has to be done on Patentability, Market analysis of competitive products, Unique Selling proposition for the proposed product and make sure the development cost and time are reasonable too. A self analysis is recommended by way of an exercise of filling up business models like the Stanford Business Canvas Model.



Incubation Centres

Incubation centres are the best places to try out any new idea. Here, all facilities like workspace, work bench, electricity, network, good ambience are provided with a view that the innovator concentrates on the idea and idea only, rather than worrying about any other matters like bill payments, municipal licenses, etc. Most of such incubation centres provide excellent environment to invoke innovation.

Proof of Concept

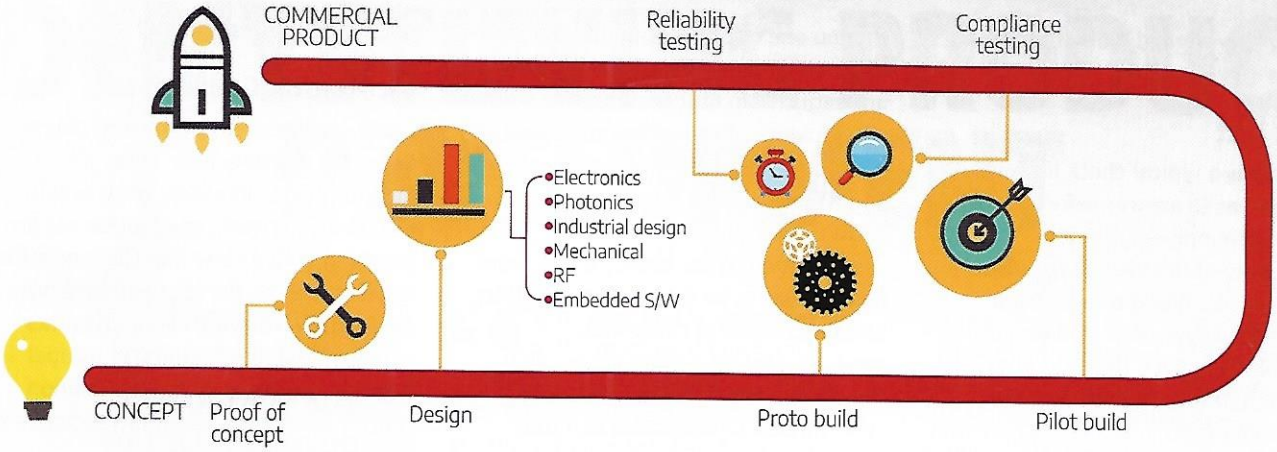
The first and foremost activity for any innovator is to prove to others and convince them that his/her idea works. This can be demonstrated using standard laboratory equipment like Power supplies, Signal generators, Spectrum Analysers, Oscilloscopes, Computers, Off the shelf development kits, etc. Once the idea is proven, the next step is to go for prototype designing, and here, the prototype needs to be very close to the final product in terms of form and fit, aesthetics, ergonomics and functionalities. A few stages like Alpha and Beta prototypes are common. Prototypes can be build using 3D printing, common PCB techniques, soft tooling, hand soldering, etc. This need not undergo any regulatory test or reliability tests, but the design has to take care of those requirements.

DFx

Design for manufacturability, Design for Assembly, Design for Testability are pre-requisites for volume manufacturing, and can not be an after thought. During the prototype design itself all these factors need to be built in the design.

Pilot Product

Once the Alpha and Beta prototypes are extensively field tested, the design is fine tuned and the pilot is built. This is

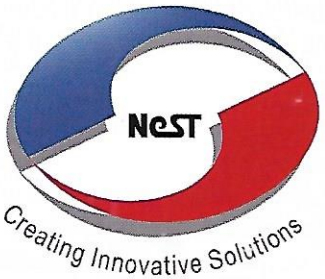


conventionally built in the same facility where the final volume manufacturing is going to take place, optimizing all manufacturing process parameters. The products built as pilot have to undergo regulatory compliances like FCC,CE, UL, etc. There are some accepted standards in the industry for category of products whether it is healthcare, communication or defence, and these tests are done on the products by accredited third party labs. Unless these certifications are obtained, products can not be generally sold in the market.

The product is just evolving at this stage with no field performance data, but customers will surely demand for warranties ranging from 5 to 10 years based on the product category. This can only be done through Highly Accelerated Life Tests (HALT) and Highly Accelerated Stress Screening (HASS) which are far beyond the product specifications. From these accelerated test data, the life of the product can be statistically estimated.

Patenting

Any idea presented to others or in any public forum can not be patented, since this is now publicly available knowledge. Thus, as soon an idea is conceptualised, file for a provisional patent, which can be easily done with minimal documentation and cost. The validity of provisional patent is one year, and it is expected that the final device can be realized atleast in a proof of concept or proto level and final patent with claims can be filed within this time frame. In the patent filing stage, please make sure to include as much claims as possible, and include them in a generic form.



Mentors

In most of the cases, the teachers, professors and seniors become mentors. Industry professionals who have gone through same pain points may not spare their time. Those who have personally gone through the pain of bringing up a start up company can contribute much more practically than academicians. Mentors have a huge responsibility to guide the youngsters through the right path, motivate them during their failures, put them across right contacts, etc. Mentors need to be on the floor, sit with these entrepreneurs, hand hold them, and become fully aware of their problems, and guide them. Social Alpha, supported by Tata Trusts, has realised the gap of this hand holding and set up Design Alpha(www.designalpha.in) to support youngsters and make them successful in product commercialisation.

Parental pressure

Conventionally four good friends join together and toss for their positions as CEO, CTO, COO or CFO and take positions. They continue to work for two more years with no income, and get financially dried up. Pressure from parents start building up, and atleast one of the team member search for another job and join a multinational company. The disintegration starts here, and the team slowly gets dissolved. To remain as entrepreneur, it is important to have Passion, Patience and Perseverance.

Conclusion

A few thoughts are jotted above focusing on hardware product development. Adequate research & due diligence before starting any venture can make the idea successful. The role of mentor is extremely important to reap success. The youngsters are advised not to remain in the fantasy of CXO labels, not to remain PPT masters, but continue with hands on engineering experience on product development.