

Developing a Military-Grade Disruptive Technology.

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Abstract

This document briefly describes the research and development process on disruptive technologies and specifically in those targeting Military & Defense non-transparent market

Military market has been, mainly due to high investment and long returns, a golden mine for long time on regards to innovation and cutting edge technology deployment. Is somehow familiar for all the industrial communities of certain advancements in Military Deployments are then transferred to the civil market on a dual use product and the likes. Investment and cutting edge technology usually go hand by hand in this sense, however, in Military and Defense markets, a line does not have to be the shortest path in between a disruptive innovation and a product commercial deployment.

What happens when customers reject a new technology, product concept, or way of doing business because it does not address their needs as effectively as a company's current approach? Does it necessarily mean that the technology or innovation is not suitable for market deployment? Those, and many other questions, arise when thinking in innovating in the Military and Defense Space and especially on disruptive innovation. But before going in further detail let's examine what is a disruptive innovation. An innovation is the process of translating an idea or invention into a good or service that creates value or for which customers will pay. In contrast, a disruptive innovation will bring a brand new value proposition to the marketplace. Usually this kind of innovation brings new features that customers will demand on the future, but no so much today. What makes it even harder is that usually the performance in comparison with existing technologies is rather low. So with these two characteristics, offering something that does not exist and not performing really well in comparison with existing solutions make this kind of innovation the hardest one [1]. Typically time to market is rather high, no one believes in it at the beginning and financing and development of such technologies is really difficult.

Particularly in these new environments there are common problems such as non-standardization, credibility, regulatory limitations and high cost associated with a new technology. It is the chicken and egg problem existing in any industry, either you bet for something or it simply disappears. It is not just to have the right product at the right timing but also to have the decision and leadership to make things happen. Most well-managed, established companies are consistently ahead of their industries in developing and commercializing new technologies— from incremental improvements to radically new approaches—as long as those technologies address the next-generation performance needs of their customers. However, these same companies are rarely in the forefront of commercializing new technologies that don't initially meet the needs of mainstream customers and appeal only to small or emerging markets.

Let's examine why a disruptive technology is even harder to develop on Military and Defense environments. Usually in this type of markets the information on regards to the requirements is rather limited due to its very own nature. In any product having a clear view on what to develop is key for success, what happens when you do not have "directly" that kind of information? In these cases the R&D strategy should be able to accommodate new input variables throughout the whole lifespan of the process. Ability to re-engineering throughout the R&D process is key to success in these opaque environments.

Micromag has developed a disruptive Radar Absorbent Technology that took around 13 years to tweak and finalize. The development process covered from basic scientific research to fast prototyping and customization according to non – clear requirements. Curiously enough, it was even more complex to decrypt the unclear requirements in terms of performance than to develop them on the scientific basis were fully developed. Micromag ability to adjust the R&D process continuously with new input variables has been key to success. It has been also extremely relevant to be able to provide peace of mind in terms on one-on-one comparison with existing technologies and break the ever-existing "apple by apple" comparison. Also, experience has demonstrated how this type of technology has higher chances of success in small non-centered markets than in Tier 1 developed markets, usually because of

hungerness of new solutions and risk assumption approaches from customers sitting in those environments.

References

[1] Joseph L. Bower and Clayton M. Christensen. Harvard business review • January–February 1995 page 1

Figures

