

Aravind Eye Care System



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FRUGAL INNOVATION & CE

Circular economy does not only mean increased recycling. It can also be translated into reduction of material input in production, different reuse and reproduction opportunities, intelligent resource management (including energy resources) and changes in consumer behavior and business models. In this case study series we are looking into cases in India where frugal innovation could accelerate the transition to Circular Economy

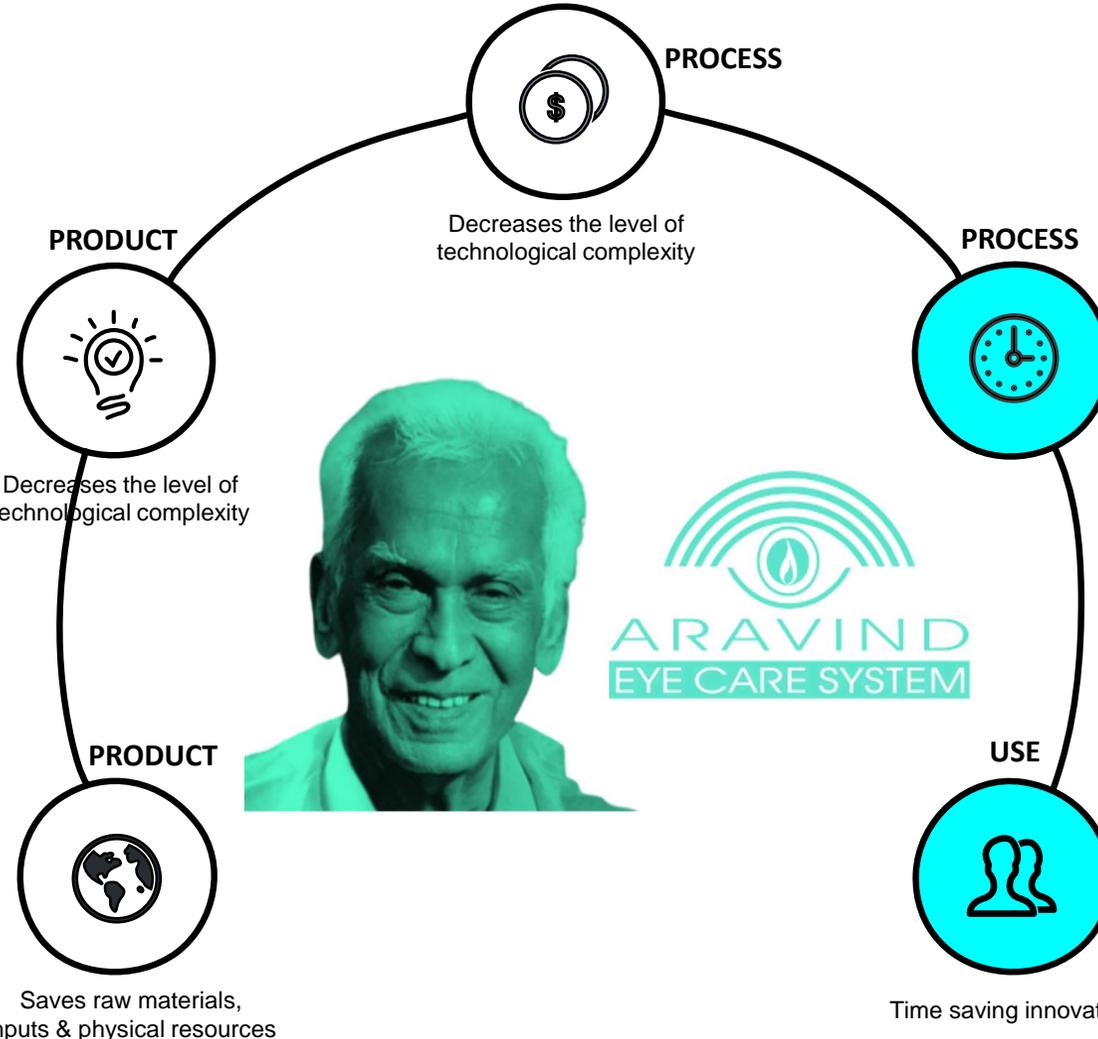
Economies of Scale, Cross-Subsidies, and Vertical Integration are the three pillars behind Aravind Clinic's success. Through partnering with organizations like Lion's Club and Rotary Club, Aravind screens thousands of patients in camps daily. AECS introduced an innovative efficiency in the assembly line for surgery and provides top-notch treatment quality. Besides, Aravind selects and trains approximately 300 young women and gives them a full-time job offer to work for Aravind.

FOCUS AREA

Sector- Healthcare
Website/Contact- <https://aravind.org/>
Awards- Gates Award for Global Health (2008)
Conrad N. Hilton Humanitarian Prize (2010)
Padma Shri Award to Dr. V. and Dr. PN

ABOUT US

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INTRODUCTION

High volume, high quality, and affordable eye care facility with the specialty in cataract surgery.

THE JOURNEY

During the several visits to America, Dr. Govindappa Venkataswamy recognized the spectacular opportunity of delivering safe and secure cataract surgery to the poor villages of Tamil Nadu.

He found this immense opportunity under the Golden Arches of Mc Donald's. Until 1976, cataract surgery was an expensive treatment for the millions of people living close to the poverty line with the constraints on the availability of skilled labor. However, discovering the transcendent meaning of the Golden Arches, he looked forward to providing the same assembly-line efficiency to cataract surgery which allowed hamburgers to reach everyone at an affordable price.

Later, Aravind Clinic was founded by Dr. G. Venkataswamy in 1976 with only 11 beds at his private home. Today it treats more than 250 thousand people every year and saved more than 12 million people's eye-sight. The quality of care at Aravind outranks the best, and ophthalmology students from institutions like Harvard and Johns Hopkins continually exchange through Aravind for practice. It has been named as a Center of Excellence by the World Health Organization.

TouchHB



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TouchHB, a small and portable device uses the effect of light on haemoglobin molecules to test levels in the blood. All a patient has to do is insert a finger into a clip connected to the device, and an LCD screen flashes the haemoglobin count.

FOCUS AREA

Sector- Healthcare

Website/Contact-

<https://www.biosense.in/touchb.php>

Awards- Sankalp Award for 'Best Emerging Company in Healthcare,' 2009

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INTRODUCTION

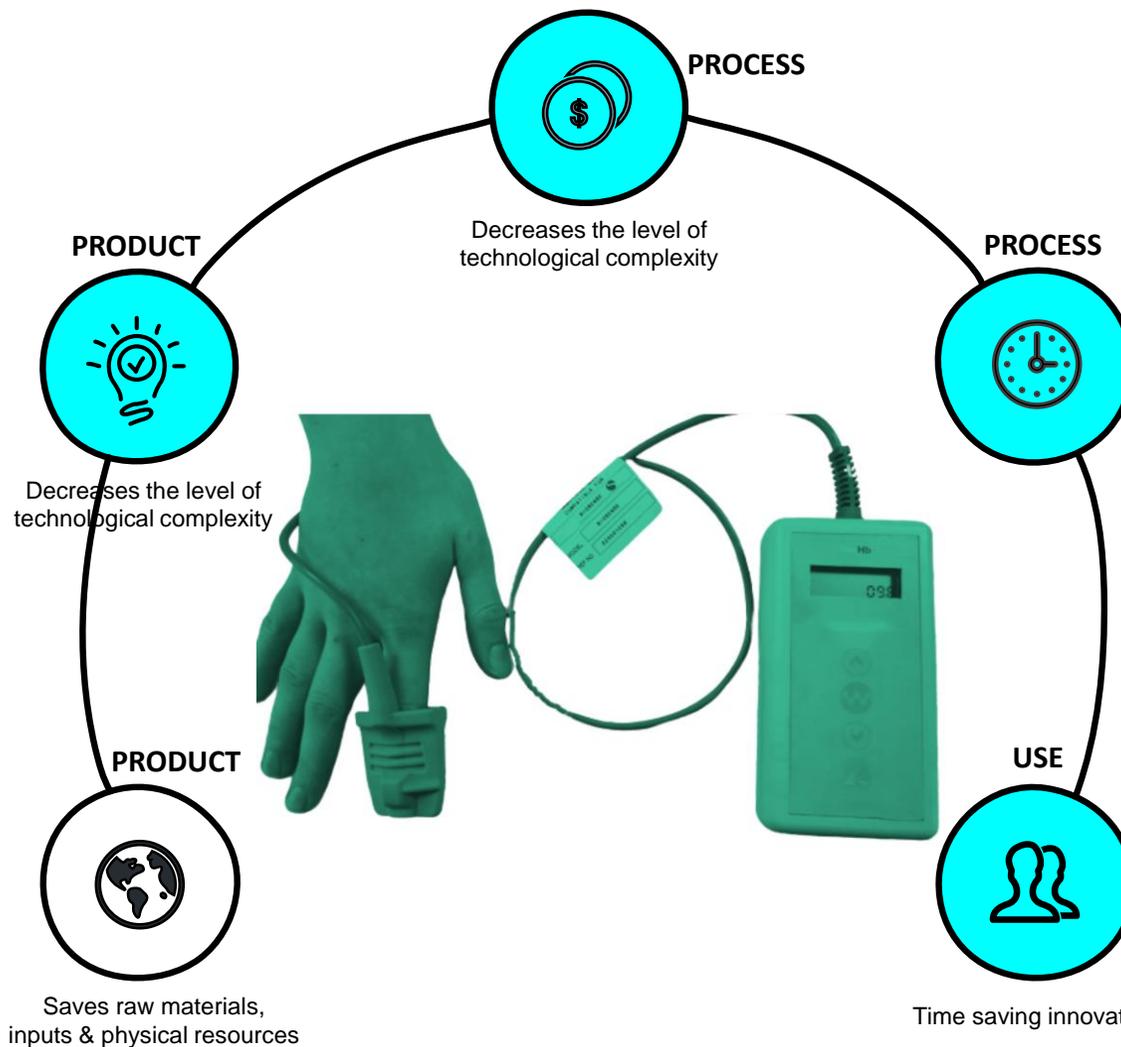
TouchHb is a non-invasive anaemia screener i.e. it detects anaemia without a needle poke by recognizing the appearance of pallor in conjunctiva.

THE JOURNEY

In 2007, a one-month voluntary stint at Public Health Centres (PHC) in Melghat, near Gadchiroli, and Parol in Vasai that made Dr. Yogesh Patil and Dr. Abhishek Sen turn into innovators. The incident of a pregnant patient diagnosed as anaemic during labor, and who bled to death while being rushed to the hospital led to the birth of TouchHB.

52 percent of pregnant women and 65 percent of pre-school children in India suffer from anaemia. "In rural areas, pregnant women skip checkups because they are afraid of needles. Others find it cumbersome to walk kilometers to the closest PHC. The most sophisticated machines in hospitals cost Rs 5 lakh but are not portable," says Dr Patil.

The innovation, TouchHB a non-invasive portable device, could check the haemoglobin level at a mere cost of Rs. 5 within a minute. The two were united with Aman Midha, 33, who holds a Masters in design from IIT Delhi, and Mishkin Ingawale, 30, who has a BTech from NIT Bhopal and PhD from IIT Kolkata.



Saves raw materials, inputs & physical resources

Time saving innovation

Jaipur Foot



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INTRODUCTION

Jaipur Foot imitates the functions of a human foot. In particular, the lightweight and the mobility are remarkable characteristics. The prosthesis allows patients to run, ride bicycles and climb trees.

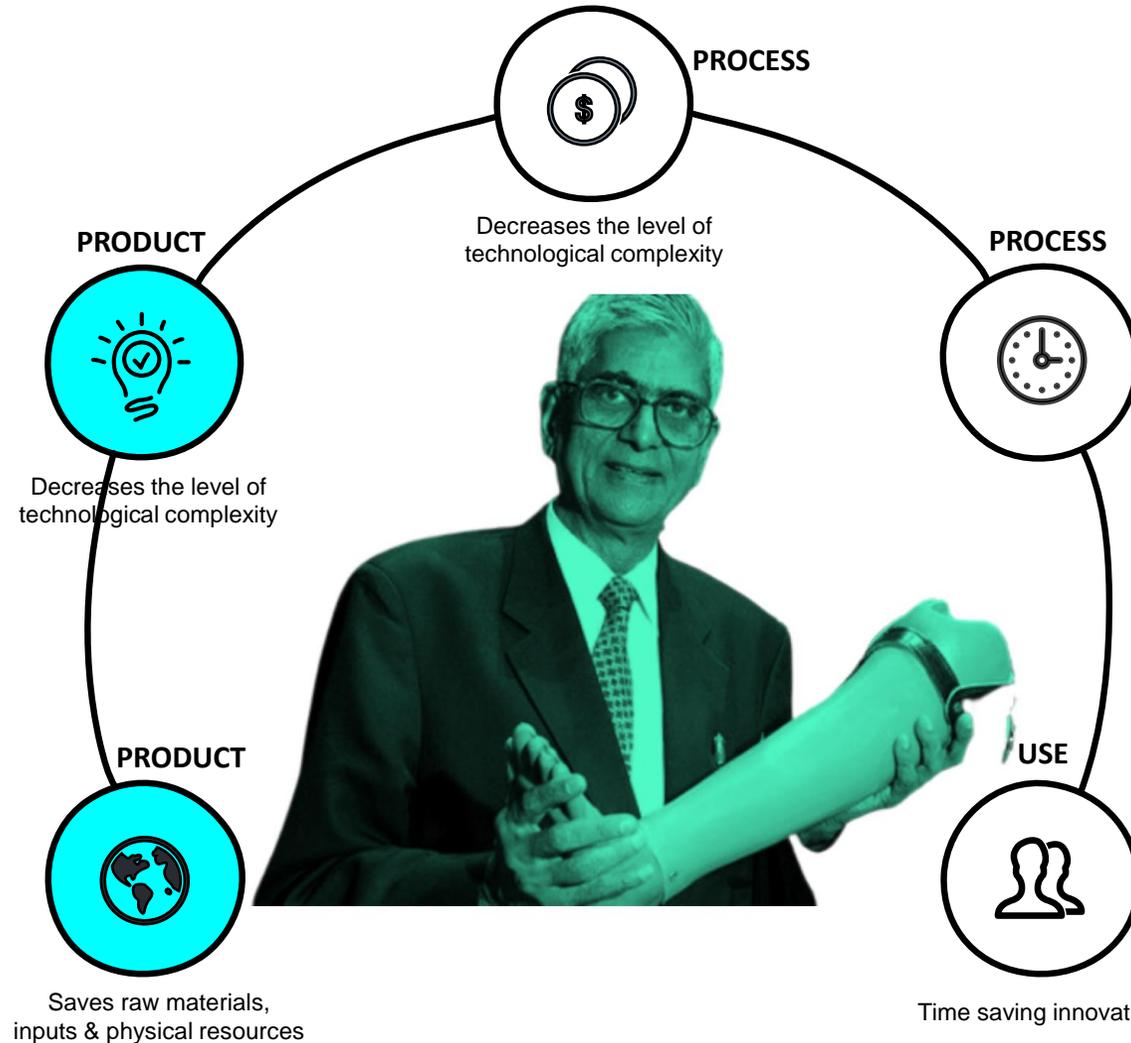
THE JOURNEY

In 1957, Solid Ankle, Cushioned Heel (SACH) Foot, was developed. However, there were several problems, such as limiting the ability to sit cross-legged faced by amputees. In the year 1968, Dr. P K Sethi approached Master Ram Chanderji from School of Art and Craft to design the lower limb that he aptly did.

Though the innovation was appreciated worldwide leading to fame and several awards for Dr. Sethi, it largely remained an object of adoration and failed to reach the thousands in need of it.

In the year 1969, the young IAS Officer, Devendra Raj Mehta met with a fatal accident in Jaisalmer, Rajasthan. His femur shattered into 43 pieces and doctors were unsure of his survival. After five months of hospitalisation, he was asked by the doctors to go to America for further treatment.

“What about those who can’t afford a trip to America?” he questioned himself and this led to the formation of Bhagwan Mahaveer Viklang Sahayata Samiti (BMVSS). BMVSS was set up to help economically backward people overcome their disabilities. Through BMVSS, 59 limbs were provided in merely 1975 and the number rose to 16,000 by 2002.



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The foot can be fitted to the patient's limb with a shank, developed and produced by BMVSS, to serve both below-knee and above knee amputees.

FOCUS AREA

Sector- Healthcare
Website/Contact-<https://www.jaipurfoot.org/>
Awards- Mentioned in the 50 best innovations of the world in 2009 by Time Magazine.

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LifeSpring Hospitals



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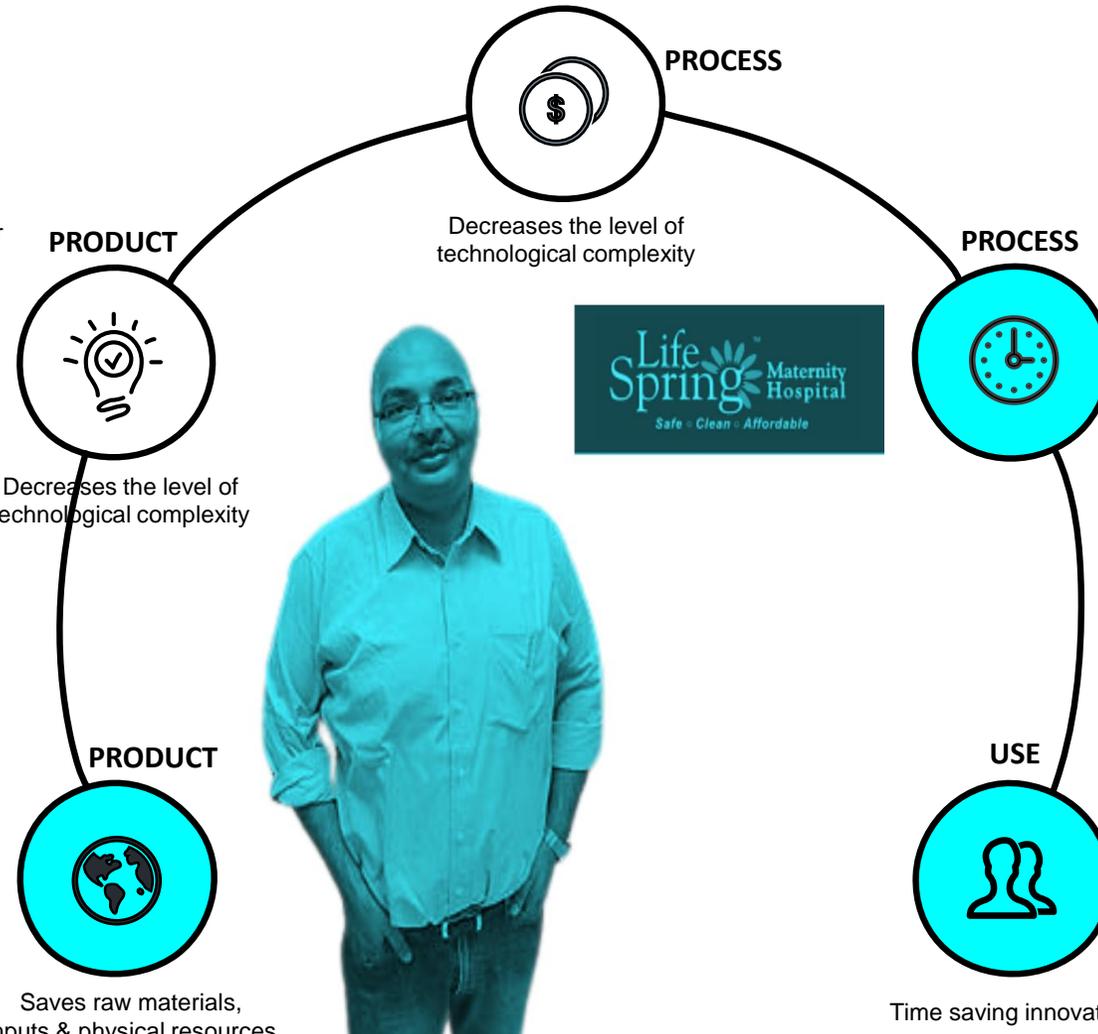
The establishment of facilities in low-income neighborhoods, extraordinarily basic operations, and dodging unnecessary expenditure on air-conditioning keeps the cost down. The company's narrow specialization permits the standard usage of protocols by nurses. Thus, providing wage becomes more economical for the hospital.

FOCUS AREA

Sector- Healthcare
 Website/Contact-<http://www.lifespring.in/>
 Awards- World Business and Development Award, 2010
 Clinton Global Initiative, commitment member
 Frost & Sullivan's Mother and Child Healthcare Provider of the Year, 2010
 ET Now Leap of Faith award, 2011

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Decreases the level of technological complexity

Decreases the level of technological complexity

Saves raw materials, inputs & physical resources

Time saving innovation

INTRODUCTION

LifeSpring Hospitals is an Indian hospital chain, which provides maternity care to women from the low-income group in Hyderabad, India.

THE JOURNEY

The Maternal Mortality Ratio (MMR) in India is 113 in 2016-18 per 1,00,000 live births. Anant Kumar, a regional manager at Hindustan Latex Limited (now HLL Lifecare), traveled to the various hospitals across the country. During these hospital visits, he used to meet women who had just undergone childbirth for learning about their family planning and contraceptive uses.

Over a while, through the feedbacks, he grasped the feeling of mothers' disappointment in government hospitals. The private hospitals were unaffordable for the poor, whereas government ones lacked proper care. Based on it, he approached the HLL board members for affordable and quality-driven health care centers.

In 2005, it led to the establishment of the first low-cost LifeSpring Hospital in Moula Ali, a low-income suburb in Hyderabad. The hospital for maternity, childbirth, and early pediatric care had 20 beds and broke even in just 18 months. The model focuses on serving the bottom 60% of the Indian population with a monthly household income of INR 3600 to 8400. The cost was brought down through narrow specialization and the use of a standard protocol.

In 2008, Acumen Fund joined hands with HLL Lifecare for a 50/50 joint venture. Until 2017, LifeSpring established 19 hospitals at distinct locations with around 550 deliveries per month.

Vaatsalya Hospitals



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INTRODUCTION

Vatsalya Hospitals (VHS) is a network of hospitals providing affordable, accessible, and apt healthcare services in rural and semi-urban India.

THE JOURNEY

In the year 2003, while working with Triesta, Ashwin Naik observed the acute shortage of medical practitioners in small towns and cities of India. He comprehended that even those practitioners who belonged to these cities were not interested in initiating their own facility in these areas.

While exploring more, he learned that doctors are unable to meet the basic infrastructure and technology needs despite the huge demand for good quality healthcare demand. Looking upon this as an opportunity, Ashwin contacted his roommate from Karnataka Medical College in Hubli.

Veerendra Hiremath, his roommate, quit his job from a Malaysian company and Ashwin wrapped himself up from Triesta. They started working on creating a healthcare model for semi-urban and rural India. "We realized that there was not only an opportunity to do good but also to have a sustainable business," recalls the 36-year-old.

With a very humble origin of one hospital in 2005 with 20 beds, until 2014, VH had 17 Multispecialty Hospitals with total bed strength of around 1200 spread across Karnataka and Andhra Pradesh. In the years 2012-14, the hospital group has seen an extraordinarily 500% growth and more than 500,000 patients are treated annually.

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Standardization is the key at Vaatsalya Hospitals to maintain the high-quality delivery of services at a low cost. Training for nurses and paramedics ensures the availability of staff. Also, to reduce the expense, VH opted for lower-resolution, black-and-white ultrasounds, and three-parameter patient monitors, alternatively of five-parameter monitors in its 18 hospitals in Karnataka and Andhra Pradesh.

FOCUS AREA

Sector- Healthcare

Website/Contact- <https://vaatsalya.wixsite.com/>

Awards- Winner, BiD Challenge India (2007)

Young Global Leader/Dr. Ashwin Naik (2012), WEF.

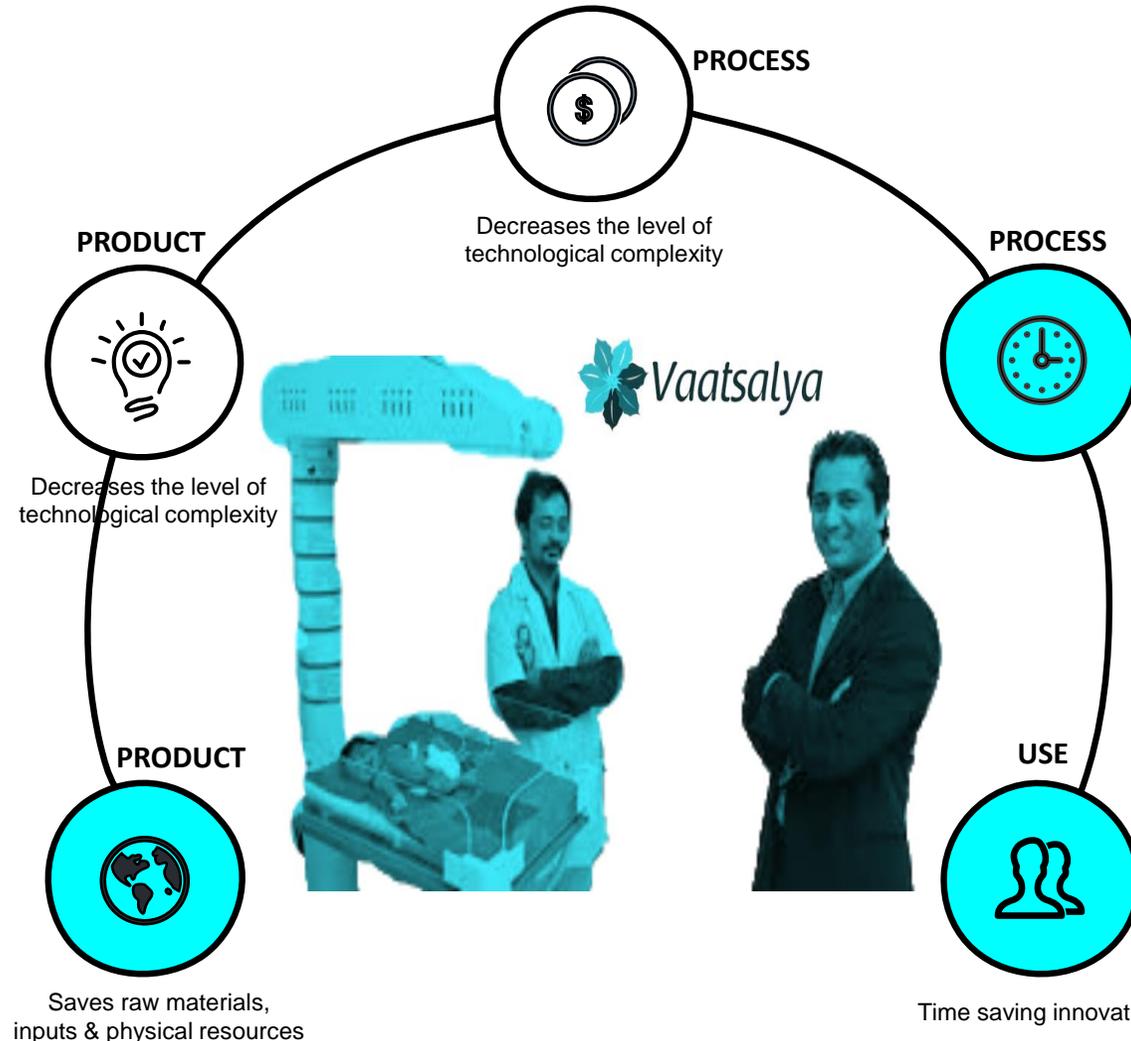
Winner, Healthcare Award, Frost & Sullivan (2010).

Hottest Startup, Top 100 Startups, TATA NEN (2008)

Winner, The Inaugural Porter Prize In India For Value Based Healthcare (2012).

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Embrace Infant Warmer

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INTRODUCTION

Embrace Infant Warmer prevents an infant from suffering through hypothermia by regulating the body temperature. The device can work with or without electricity and costs only a fraction of a standard incubator.

THE JOURNEY

The story of Embrace commenced in the year 2007 with the vision to prevent the infant death rate problem in the developing countries caused by Low Birth Weight (LBW). LBW can lead to hypothermia, a situation when an infant's temperature drops down dramatically. Thus, they require an incubator to maintain their body temperature.

The four entrepreneurs Rahul Panicker, Naganand Murty, Jane Chen, and Linus Liang from Stanford University, recognized this problem and traveled to India to research further. They continue to design a prototype and register themselves as Embrace-nonprofit organization in 2008.

In 2010, First low birth weight infants enrolled in multicenter clinical trials in three hospitals in India. However, the first product was kick off for Little Flower Hospital in Kerala, India, in 2011. It's affordability, portability, and reusability makes it accessible for the people living in remote areas. It is cheaper than a standard incubator and could work without electricity. Until now, Embrace Infant Warmer has served up to 3 lakh babies in 22 countries.

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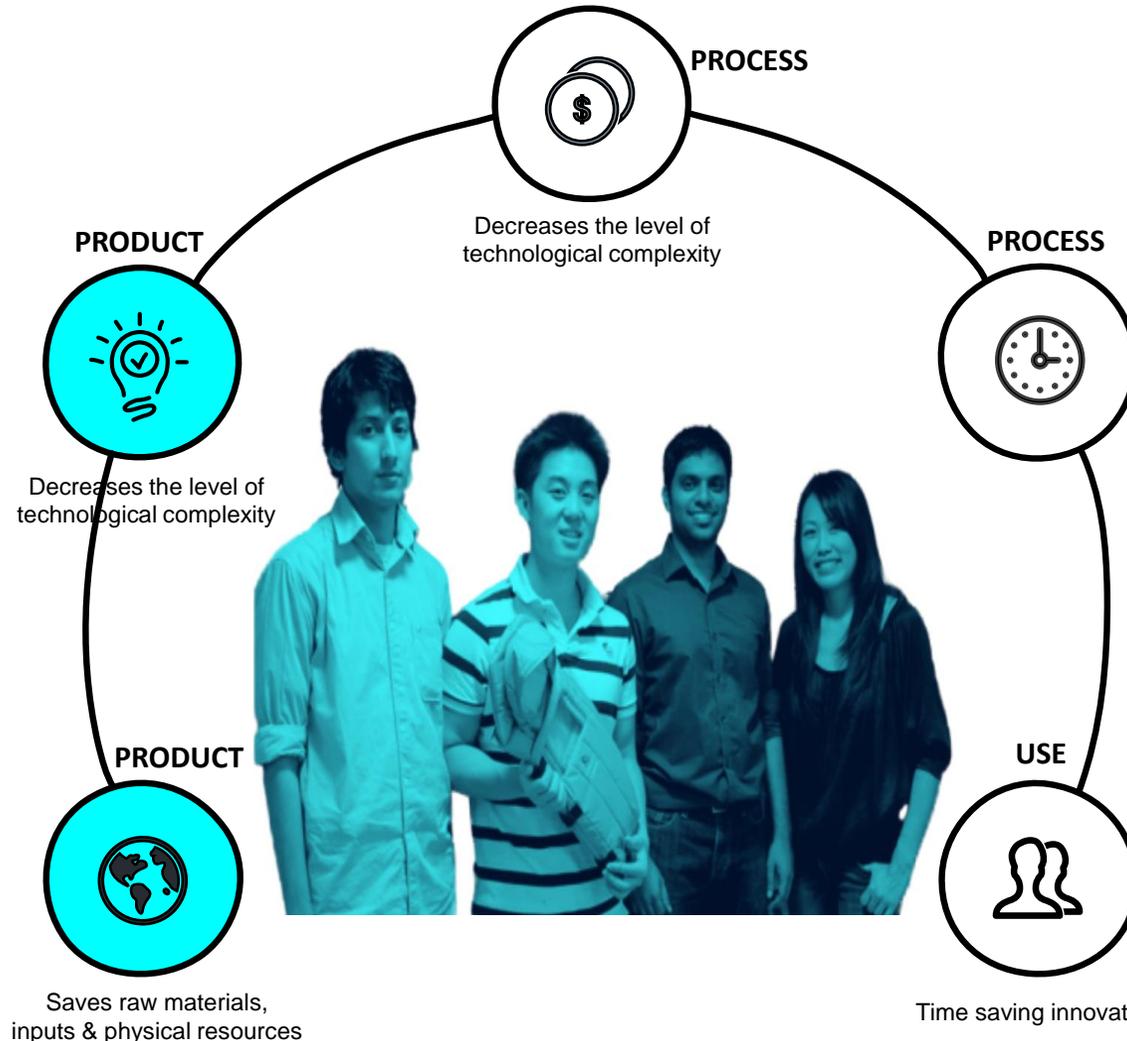
The miniature sleeping bag that keeps low birth weight babies warm. It includes a reusable pouch of phase change material (PCM). The wax pouch is heated using electricity or the hot water to regulate body temperature. The heat then disseminates for 4-6 hours in the sleeping bag keeping the infant normothermic during this time.

FOCUS AREA

Sector- Healthcare
Website/Contact- <https://www.embraceinnovations.com/>
Awards- The Economist Innovation Award
TED Fellows
Schwab Foundation's Global Social Entrepreneur of the Year award

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Narayana Hospitals



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INTRODUCTION

Narayana Hrudayalaya (NH) which set up as a private enterprise provides affordable and quality healthcare for the poor.

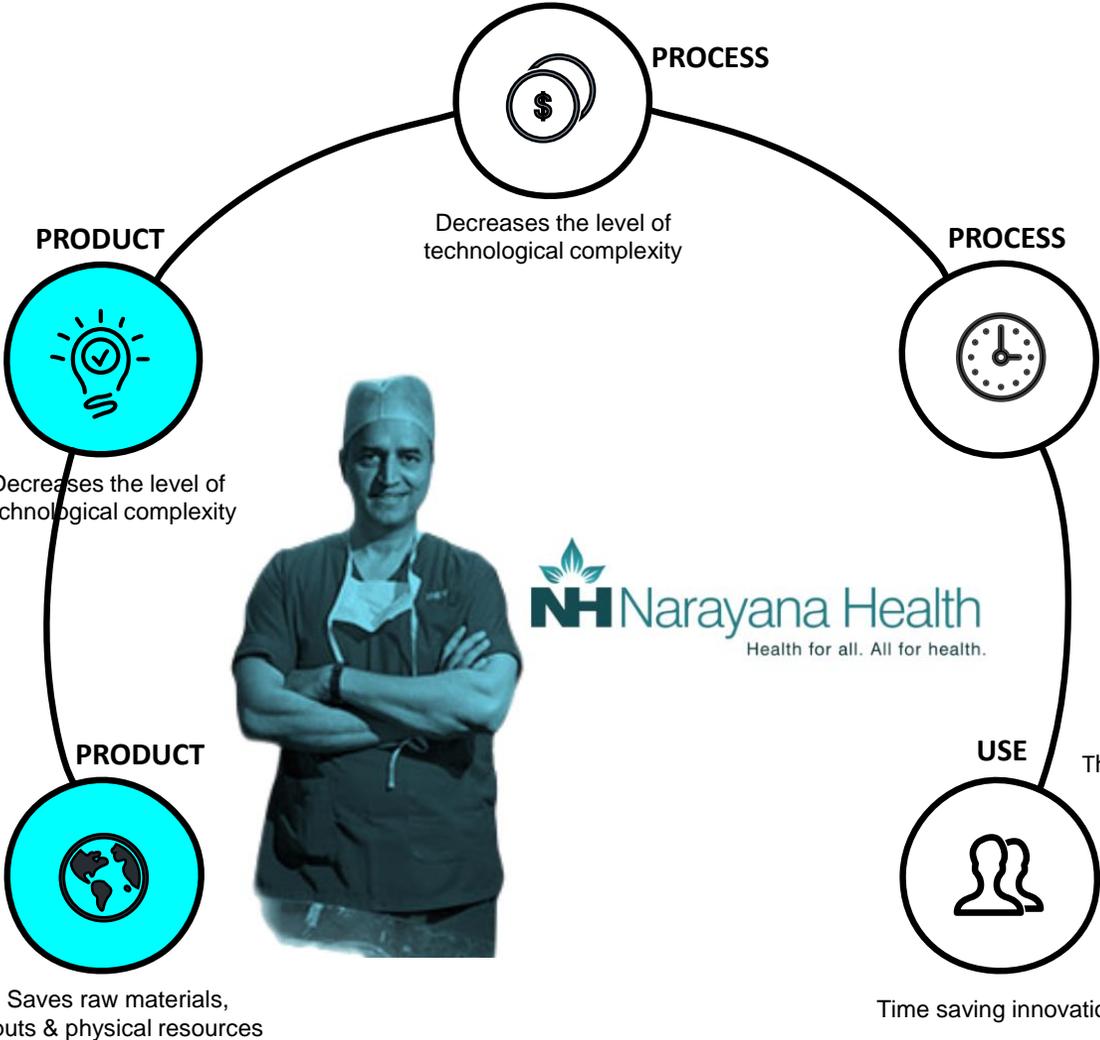
THE JOURNEY

Dr. Devi Prasad Shetty, after completing his higher education in England and a decade of experience abroad, returned to India in 1989. He founded the Asian Heart Foundation (AHF) in Calcutta as a non-profit organization focusing on cardiac care. AHF assisted in setting up of several hospitals such as B.M. Birla Heart Research Institute, Manipal Heart Foundation’s hospital in Bangalore, etc.

In 1999, AHF initiated its own Rabindranath Tagore International Institute of Cardiac Sciences (RTIICS) in Kolkata. Dr. Shetty never found difficulty in raising funds for the hospital. In his interview with New Scientist magazine, he stated “Believe it or not, it’s not difficult to arrange for funds when your cause is noble”.

In 2003, cardiac surgeries were underserved as only demand for 55,000 were met compared to the for 125,000 open-heart surgeries per million people. In the year 2001, Dr. Shetty and his father-in-law's construction firm provided 25 acres of land to start the hospital in Bangalore. The hospital was named Narayana Hrudayalaya. In the initial part of the first phase, NH had 225 beds.

To make the model sustainable, Dr. Shetty focused on providing the best quality service. This attracted capable of full-price paying patients. Alongside this, they assisted in subsidizing the same for the poor.



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The NH business model focuses on philanthropy, need-based price differentiation, and economies of scale for sustainability. NH also introduced several innovative schemes including low-cost insurance schemes such as Arogya Raksha (in the private sector) and Yeshaswini (in the cooperative sector) for the treatment of the poor.

FOCUS AREA

- Sector- Healthcare
- Website/Contact-<https://www.narayanahealth.org/>
- Awards- Padmashree (2003)
- The World Economic Forum Social Entrepreneurship Award (2005)
- NDTV Indian of the Year Award (2010)
- The Economist Award for Innovation in Business Process (2011)
- Padma Bhusan (2012)

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Tata Swach



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INTRODUCTION

Tata Swach is a water purifier that purifies water at low cost. It has no harmful chemicals, does not require boiling or electricity, and leads to zero water wastage.

THE JOURNEY

Swach, initiated as Sujal Rice Husk Ash (RHA), fell short of the World Health Organization (WHO) standards as it could filter only 85% bacteria. However, the simplicity of the product impressed Mr. Ratan Tata. He, himself took the personal enthusiasm and encouraged the crew for developing the product based on international standards.

The team was set up under the supervision of Mr. Sabaleel Nandy. Dr. Murali Sastry, chief scientific officer of Tata Chemicals Ltd. (TCL), one of the top nanoscientists in India decided to nano coat the RHA with silver. The silver increases the effectiveness of RHA against bacteria.

The water produced through the filter with silver met the international standards of water purifier making it low cost, user-friendly and low-maintenance. Tata Swach provides safe drinking water at Re. 0.10 per liter.

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Tata Swach uses Rice Husk Ash (RSH) impregnated with nano silver particles to purify water. It consists of three chambers stacked vertically. The topmost reservoir is filled with untreated water, the middle portion contains the cartridge and the lowermost chamber collects purified water.

FOCUS AREA

- Sector- Healthcare
- Website/Contact- <https://tataswach.com/>
- Awards- Winner at the Asian Innovation Awards 2010
- Pitch Marketing Summit 2010
- IDSA Design of the Decade Awards
- IF Product Design Award, 2010
- Product of the Year — 2012

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MAC 400 ECG System



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MAC 400 ECG System is a portable device with a long-lasting battery. Single-touch operation leads to the analysis. Hence, it minimizes training needs. Lithium battery requires less than three hours makes the device cheap and affordable.

FOCUS AREA

Sector- Healthcare
Website/Contact- <https://www.gehealthcare.in/>

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INTRODUCTION

The electrocardiogram (ECG) developed by GE Healthcare, which measures the electrical activity of the heart, is available at a low cost and small in size.

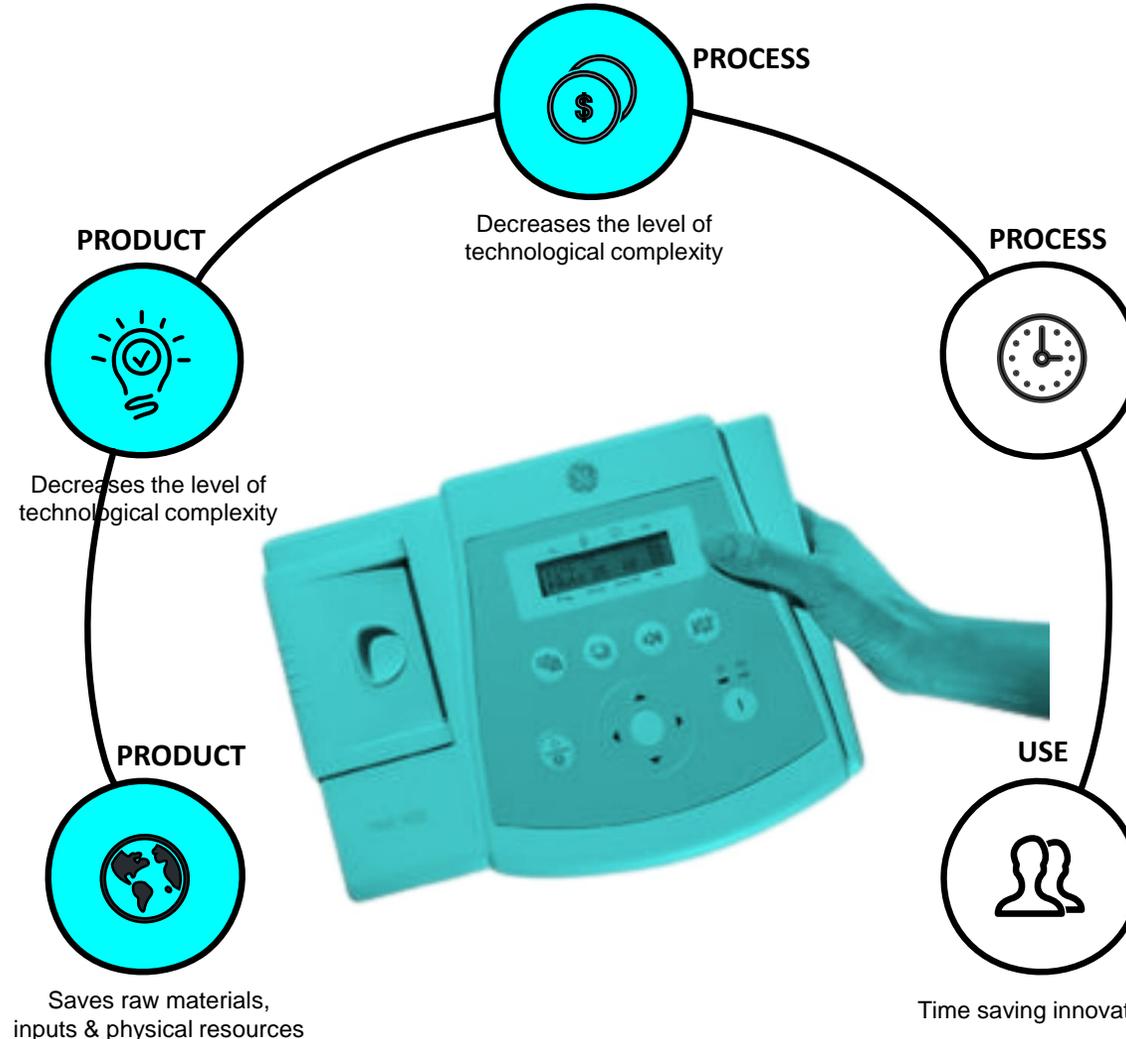
THE JOURNEY

In May 2009, General Elective focused on designing innovations based on low costs, better quality, and easy accessibility for emerging countries.

Using regional Research & Development contributed to additional advantages such as rapid operations, lower costs and substantial knowledge about locally accessible components and costumers. It led to the development of a handheld electrocardiogram (ECG) device for India.

The product was developed with merely \$500,000 within a span of 22 months which comparatively is a fraction of time and money. The Reverse Innovation is directed towards the development of innovation at a low cost.

In addition, the product was widely sold in the US markets too, fixating the belief that products fulfilling special needs in the emerging markets can not be sold in rich countries.



Aum Prosthetic Device



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INTRODUCTION

Aum Voice Prosthesis – a voice prosthesis device which supports patient when the larynx or voice box has been removed, to speak, and eat properly.

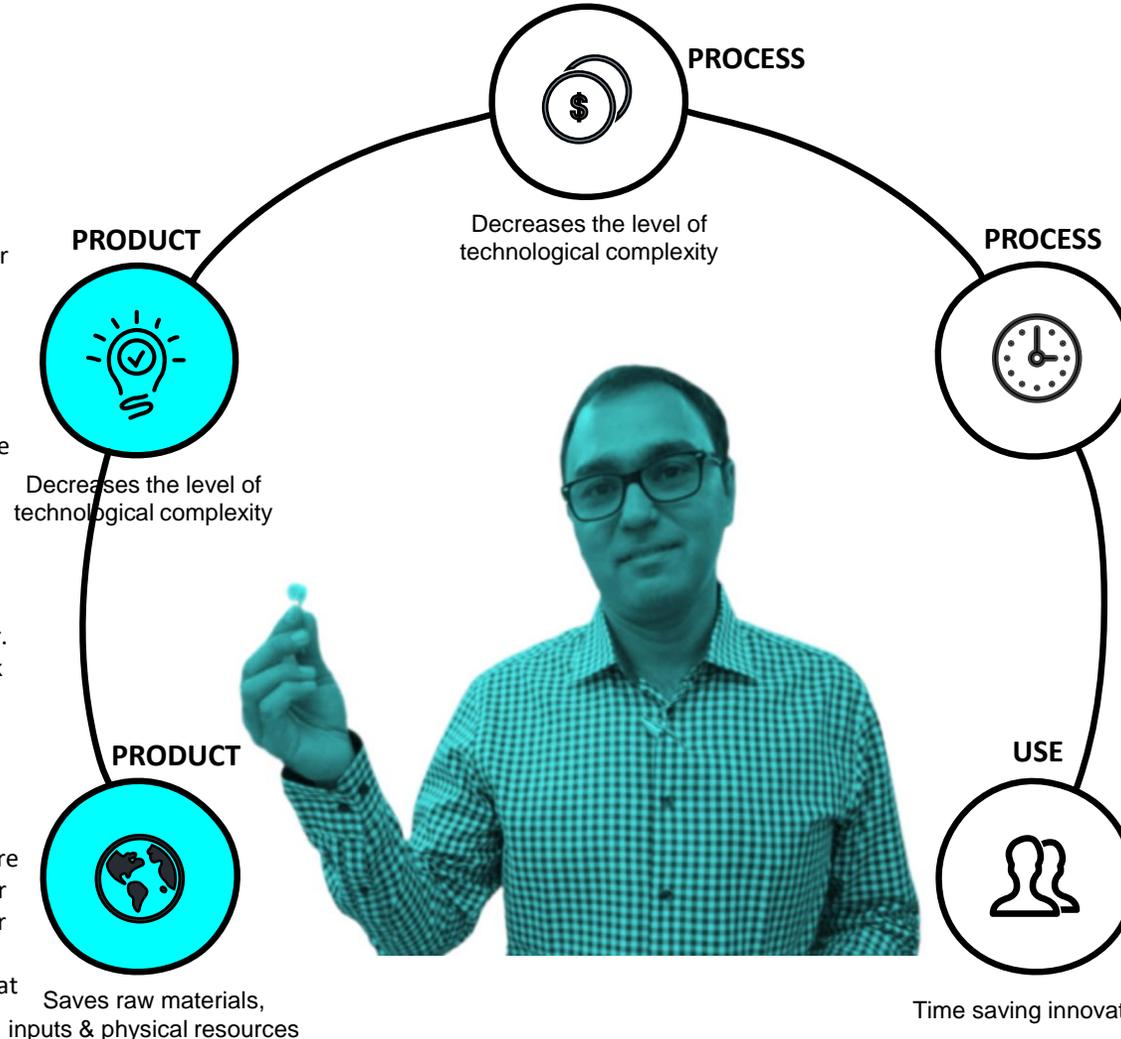
THE JOURNEY

Dr. Vishal Rao, a renowned surgical oncologist worked at HealthCare Global (HCG) Cancer HealthCare Global (HCG) Cancer in Bangalore. During his profession, he treated several patients suffering from throat cancer belonging to different financial backgrounds.

After the cancer surgery, the removal of the voice box leads to the requirement of the prosthesis. Prosthesis serves the purpose of speaking and swallowing. The estimated cost for it could be from Rs. 15,000 to upto Rs. 30,000 and is recommended to be replaced every six months.

Usually, Dr. Rao raised funds from pharmaceutical companies in terms of donations, or discount for the financially weaker sector. However, while conversing with his industrialist friend Shashank Mahesh, they start leveraging their ideas to solve the issue. Consequently, they end up with the device which costs only Rs. 50 as compared to Rs. 15,000 and could work at least for six months.

As reported by YourStory, the startup-Innaumation has sold more than 300 Aum prosthetic devices with the help of its 12-member team until March 2020. Aum costs Rs 3,000 along with the other accessories items like guide wires, a secondary inserter, brush, inserter hard gel, and a patient laryngeal bib which is produced at Shashank's rubber company.



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When the larynx or voice cord is removed during the oral surgery, the windpipe and food pipe are detached from each other, leading to a gap between it. The Aum device is planted in this opening. Air from the lungs vibrates the voice box. The Aum replacing the voice box, vibrates to produce a sound.

FOCUS AREA

Sector- Healthcare
Website/Contact-<http://www.innaumation.com/>
Awards- State innovation award

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