



Biomedical Engineering & Technology Innovation Centre
*Connecting doctors, researchers, entrepreneurs and investors
 for indigenous and affordable medical device innovation*



BETIC– Biomedical Engineering & Technology Innovation Centre was established in 2014 at IIT Bombay to bring doctors, researchers, entrepreneurs and investors together for medical device innovation. The initiative is supported by RG S&T Commission, Mumbai, and DST-NSTEDB, Ministry of S&T, New Delhi. Two satellite centers were set up at COE Pune and VNIT Nagpur, followed by self-supported BETIC cells in four engineering colleges (KJSC Mumbai, MIT-ADT Pune, GHRCE Nagpur and SIU Pune) and seven medical institutes (GMC & JJH Mumbai, MGMIHS Sanpada, HITRT Mumbai, BJMC Pune, DMIMS Wardha and BKLWRH Dervan), making it the largest such network in the country.

The core team comprises about 30 faculty and project managers. More than 80 researchers and students (PhD, Masters, B. Tech) worked at the centers. Many of them incubated their start-up companies or joined healthcare industry. About 75 doctors and industry experts are associated as mentors or facilitators.

A unique model of collaborative innovation involving doctors, researchers, entrepreneurs and investors has been evolved: ‘bedside-bench-business-bedside’ for traversing the ‘valleys of death’ that lie between ideation, invention, innovation and final impaction. It includes four stages: defining an unmet clinical need, developing a novel solution, delivering a tested device, and deploying it in clinical practice.

- Glaucoma screener** (OKO Icare Solutions)
- Endotracheal block detector** (Atmen Technovention)
- Smart stethoscope** (Ayu Devices)
- Surgery planner** (Algosurg Products)
- Hybrid splint** (Medi Asha Technologies)
- Menstrual cup** (Care Form Labs)
- Diabetic foot screener** (Ayati Devices)
- Knee ankle foot orthosis** (Aumeesh Tech)
- Patient-specific bone scaffold** (Lucid Implants)
- Artificial temporal bone** (Nu Ossa Mediquip)
- Centric jaw recorder** (Prosthocentric)
- Mandible surgery guides** (Precisurge)
- Flexible burr** (Aur Innovations)
- Skin spray gun** (Pacify Medical)
- Automatic Suturing** (Denovo Bioinnovations)
- Burn patient isolation** (MedGyor)

In the last six years, BETIC team members gathered over 400 unmet clinical needs from different hospitals, developed proof-of-concepts of 240 different devices with inputs from expert clinicians, and filed 50 patents (+10 international PCT) for screening & diagnostic devices; surgical instruments; implants, prostheses and assistive devices. Team members incubated 16 start-up companies and licensed or developed 14 products for industry partners.





THE ESSENCE OF Medical Device Innovation



B Ravi



BETIC team members won the highly competitive BIRAC Biotechnology Ignition Grant (BIG) 15 times, funding as many startup companies. They also won 40 other awards including Gandhian Young Technological Award, DST India Innovation Growth Programme Medal (thrice), Google Impact Challenge, Emerging Startup of the Year, American Bazaar Start-Up Competition, Young Entrepreneur, Indo-Swiss AIT, SICOT Research, SKB Seva Samaj, Maharashtra Startup Week, AI Innovation Challenge, NCPEDP-Mphasis Universal Design, IET IOT Challenge- Healthcare track and Infosys Aarohan. These innovators were featured in major national newspapers and magazines (such as Forbes India and Outlook Business), as well as television channels and online social media.

Over 400 engineering and medical students were introduced to med-tech through 10 Medical Device Hackathon (MEDHA) organized at different institutes in Mumbai, Pune, Nagpur, Wardha and Kolhapur in 2017, 2018 and 2019. Further, 300 working professionals were trained in 5-day Medical Device Innovation Camp (MEDIC) at VNIT Nagpur (2016), COE Pune (2017) and IIT Bombay (2015, 2018, 2019). These helped in curating clinical needs, identifying potential innovators and entrepreneurs, and seeding the innovation culture in new institutes, who later become part of the BETIC network.

The innovation process evolved at BETIC is described in 'The Essence of Medical Device Innovation' book (Crossword, Mumbai), of which 1800 copies are in circulation. The Medical Devices Quality Management System of BETIC received the ISO 13485 certification. This eases the path for government regulatory approvals for medical devices developed by the innovators.

Project faculty and researchers shared their experience through 70 publications and 150 invited talks in various institutes and workshops. Their experience and resources can be leveraged and 'institutionalized' to strengthen healthcare innovation eco-system, and create a larger pool of innovators creating affordable devices leading to social impact. Visit us or get in touch to discuss how to work together. Thank you!

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