

**IIT Bombay, Desai-Sethi School of Entrepreneurship**  
**Term 1: July – November 2021: Introduction to Entrepreneurship**  
**ENT 603: End – Semester Examination**

**Marks: 25**

**Time: 3.30 pm to 5:30 pm**

**16-11-2021**

**INSTRUCTIONS**

1. Start screen recording and switch on webcam before you start the exam. Ensure the time is correct and the webcam covers all the visible area around you completely and not just face. (NOTE: You must check if things are fine on your own, like your system time, whether the recorded video is showing the screen recording and the webcam video in it etc.). Your webcam should be on throughout the exam. In case you get disconnected, ensure that you reconnect to MS Teams immediately.
2. Turn off incoming video to save bandwidth.
3. Type your Roll No and Name clearly on your Answer scripts, right at the top.
4. Question paper has one descriptive and five short answer questions. Content of an answer is more important than the length.
5. This is an Open Book Exam. However, No internet and No sharing.
6. Question paper will be released on Microsoft Teams Channel ENT603 at 3:20 pm
7. At the end of the examination, submit your answers as follows
  - a. Answer sheet to be type written into Word / Google doc and submitted as a single PDF file
  - b. Name the file as Rollnumber\_Fullname.PDF
  - c. Upload the file on MS Teams Assignment Section before due time (5:40 PM)
  - d. Make sure to '**turn-in**' your answer sheet after uploading at the assignment section.
  - e. Please confirm with the proctor that your answer paper is uploaded and visible on MS Teams to the proctor.
8. Submission of Recording: Deadline: 12 midnight of 16<sup>th</sup> Nov. The recording will most likely be in your Downloads folder – Please rename the file RollNo\_Full Name and then upload . Non submission of your recording is an exam violation.

<https://drive.google.com/drive/folders/1qEevKHRSQlsamvd8ne8sHyZamhEnIdTS?usp=sharing>

**Q 1: Business Plan Write up: 10 Marks**

Use the Ayu Devices Case Study (see attached PPT) which was used as an example of New Product Development- Idea to Impact. List your assumptions for each item of the business plan, please note that we are **NOT** asking you to make the business plan, **just list 3-5 assumptions for each of the listed elements of the business plan – Milestones, Revenue and Costs.** What we need is your original thinking not what Ayu Devices actually did.

- 1) 5-year milestone chart (Target Customers & Markets, Product Development, Marketing)
- 2) 5-year Revenue build up using unit economics (Pls keep in mind Revenue Streams / GTM Channels etc)
- 3) Cost statement – variable costs using unit economics and other fixed costs

**Q 2: Short Answers: 3 marks each, Answer any 5, Total 15 marks**

Q2a. Think of problems faced in an academic institution – it can be a problem faced by students, faculty members, administrative staff, any group associated with the institution. Which problem can be solved using Blockchain Technology and what dimension of blockchain would it use?

Q2b. Cryptocurrency ads are bombarding the young Indian consumer – COINDCX, Kuber Coinswitch, WazirX – to name a few. Detail a couple of use-cases of cryptocurrency that start-up ventures could be created around.

Q2c. Please list the “Valleys of Death” in the context of Product Innovation and taking a product from Idea to Market. Take any of the valleys of death and explain what an inventor / entrepreneur can do to get past the valley.

Q2d. Which of the following can be patented and why? Explain using the requirements of patentability discussed in the Intellectual Property class. Demonstrate for each of the cases below.

- 1) A new process for compacting crop waste into briquettes for sale as fuel
- 2) A multisided platform that enables easy parking in the crowded cities by connecting parking lot owners with car drivers

Q2e. From the project team idea that you are working on, list 2 items you could protect using Intellectual Property Rights – they can either be patent-related, trademark related, or copyright related.

Q2f. List 3 value-creation factors that investors are interested in. Explain why investors look at these factors in a start-up’s pitch plan. For a bonus mark, explain digital advantage in the context of investors’ valuation of a start-up.

Q2g. Explain the different types of prototypes – Looks-Like, Feels-Like, Works-like using examples – it could be the same idea with 3 versions of prototypes, or they could be for different ideas.

Q2h. List any three learnings you have received about how to be a better communicator. Please also explain why each of these is important in the context of an entrepreneur’s life.

Q2i. List three entrepreneurial learnings you are taking away after doing the Introduction to Entrepreneurship course. Explain how you think these could help you in your life and career.

## Product Innovation – Idea to Impact

### Stories and Learnings from Medical Technology Sector



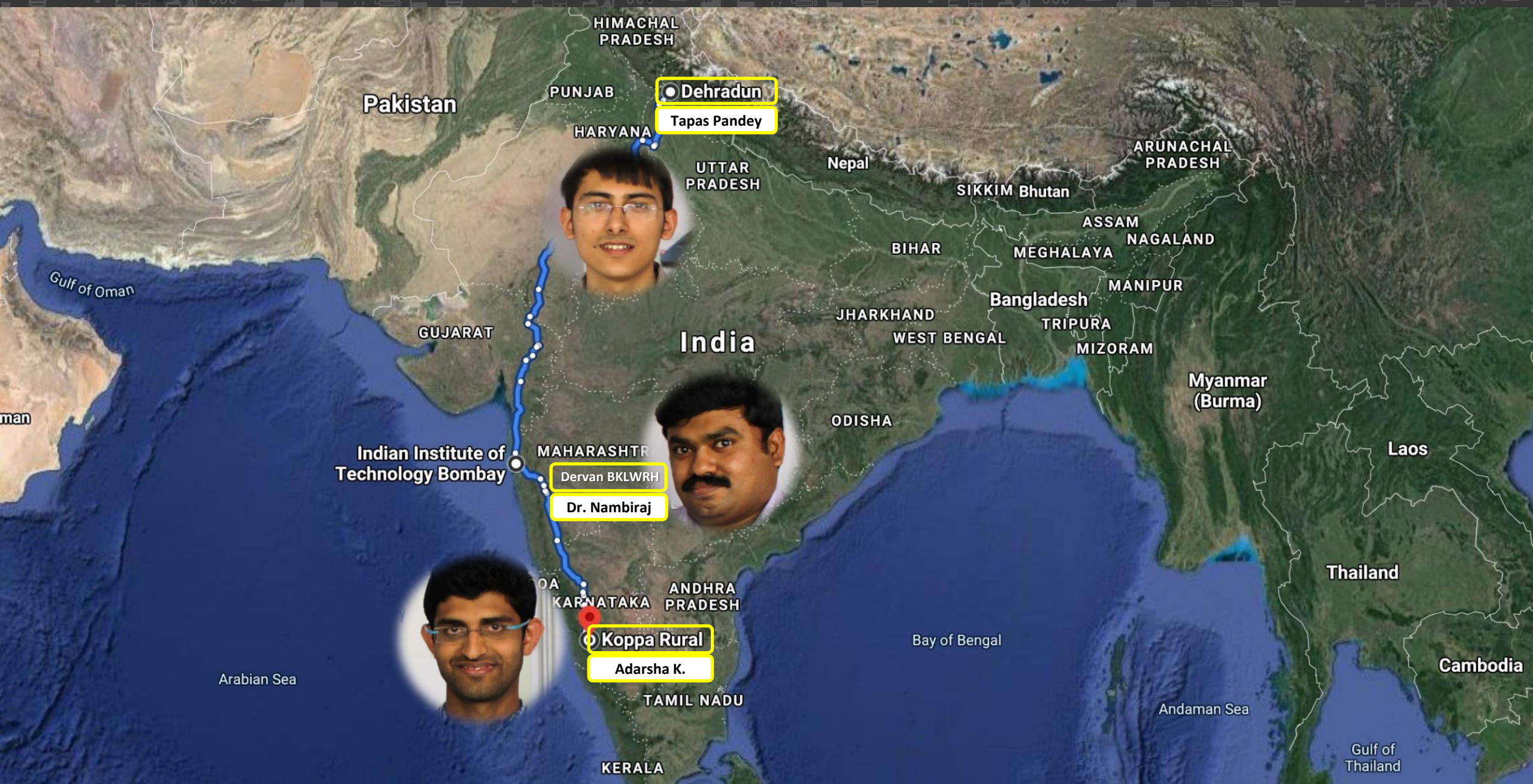
- **Idea to impact**  
Pathway and valleys of death
- **Success stories**  
Smart stethoscope module
- **Behind the scene**  
Running partner for innovators
- **Best practices**  
Success stories & sustainability

**Prof. B. Ravi, IIT Bombay**

Mechanical Engineering Department | Desai Sethi School of Entrepreneurship  
Biomedical Engineering and Technology Innovation Centre (BETIC)

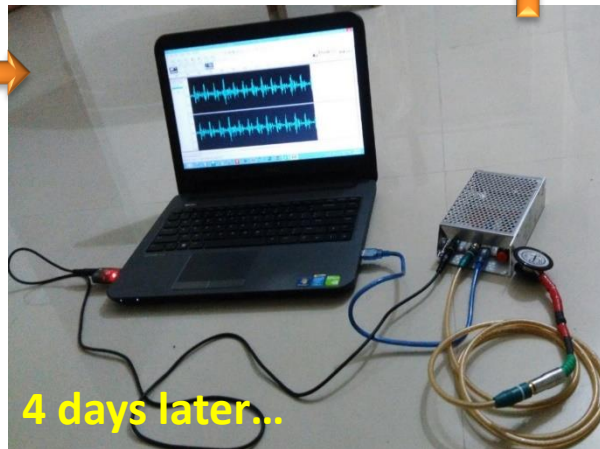
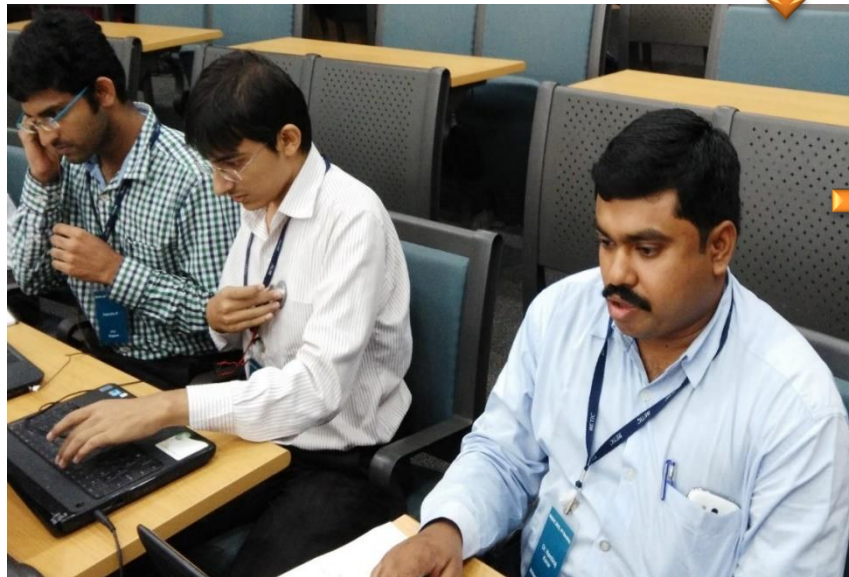


# Story of Smart Stethoscope



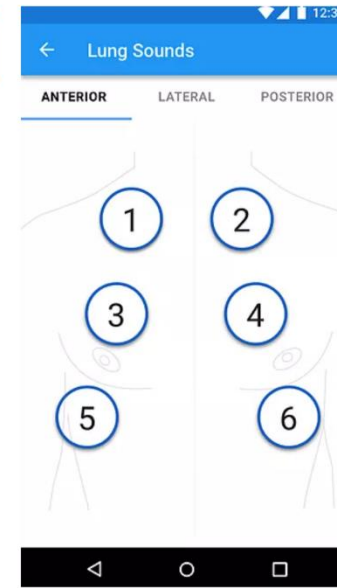
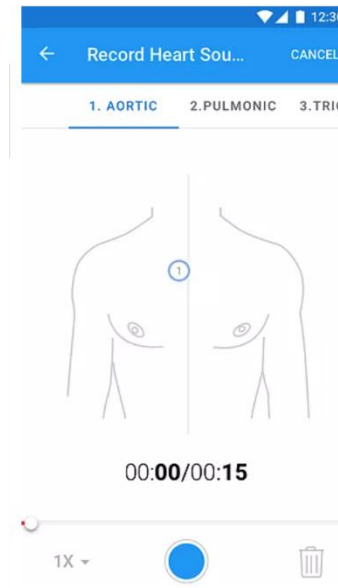
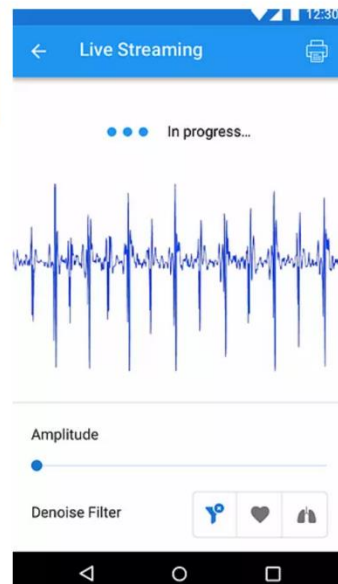
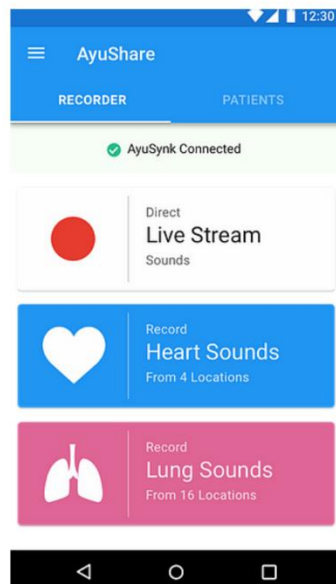
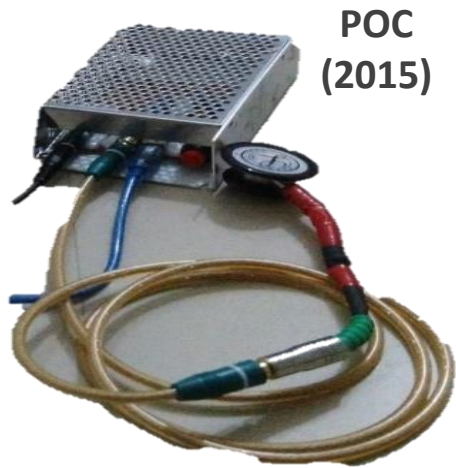


# Smart Stethoscope – Team





# Smart Stethoscope – Product



Software (2019)



# Smart Stethoscope – Funding

## Indian Patent Filing

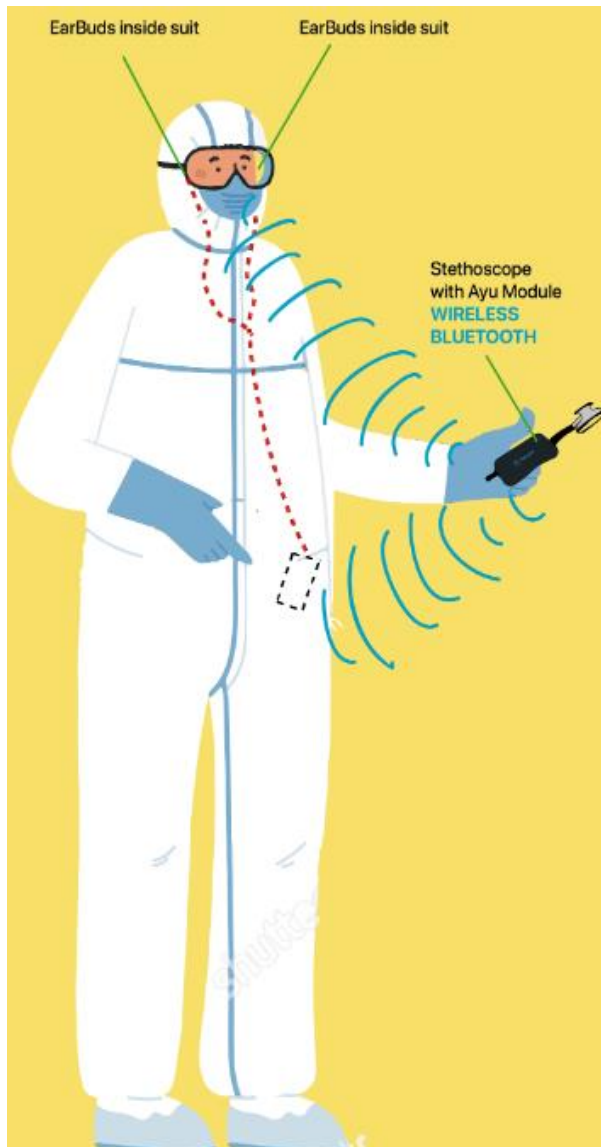
“A novel device which allows conventional auscultation as well as electronic recording, transmitting wireless information and simultaneous hearing by multiple users,”  
201621029618, 30 Aug 2016

## Biotechnology Ignition Grant, 2017





# Smart Stethoscope – Pivoting



## Step 1

Connect AyuSunk to your smartphone via the AyuShare mobile App



## Step 2

Connect your Smartphone to wired earphones or wireless Bluetooth headsets



## Step 3

Auscultate and Listen to heart/ lung sounds via the earphones /headsets



Hi Adarsh

Just read about your digital stethoscope in Newspapers. I am Dr Alka Jadhav professor pediatrics at sion hospital. I feel these stethoscopes will be of great help in COVID . We will need atleast 5 or may be more.

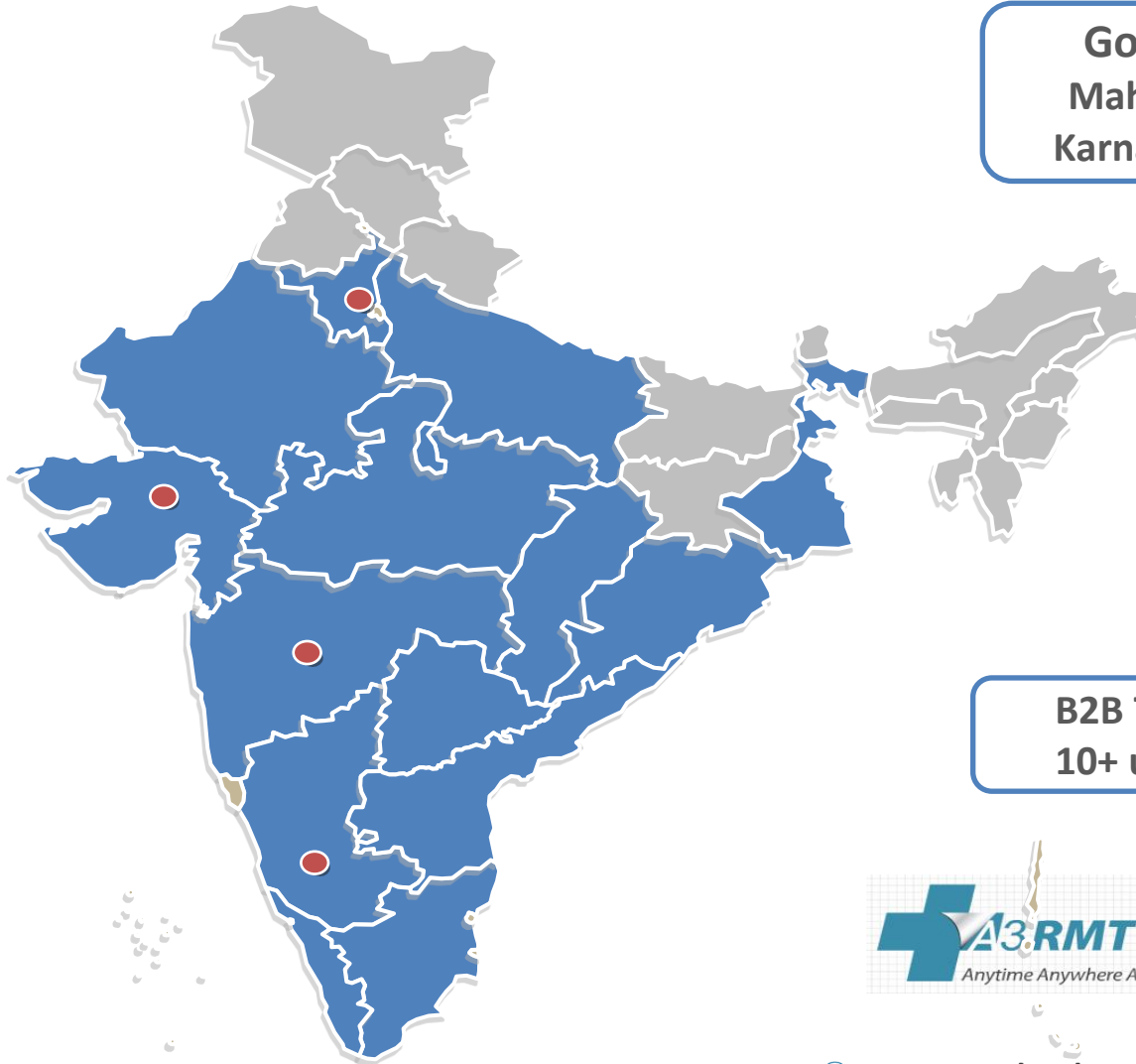




# Smart Stethoscope – Customers



~3000  
units sold



Government PHCs  
Maharashtra, Gujarat,  
Karnataka, Bihar, UP, JK

B2B Telemed customers  
10+ units sold/company



# Smart Stethoscope – Media



Home / Special Report / Innovation Nation

## The frugal innovators at IIT-Bombay

Housed in a small shed at IIT-B, the Biomedical Engineering and Technology (incubation) Centre, or BETiC, is nurturing medtech innovators to create low cost, yet high quality devices

BY VARSHA MEGHANI

PUBLISHED

HEALTH CARE INDIA INNOVATION

### Engineers Invent Low-Cost Digital Stethoscope for Better Village Healthcare!

The digital stethoscope is being commercialised by the startup Ayu Devices, with over 60 orders for the device. The startup is also focusing on bringing it to rural India.

by Ahmed Sherif  
New to you 102 pm

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TRENDING NOW #NarendraModi #MumbaiRains #DonaldTrump #AtalBihariV

#### Mumbai: IIT-B researchers develop steth that can filter noises

— By Divaker Sharma | May 03, 2018 09:31 am



Stethoscope

Mumbai: The two researchers, Adarsha K and Tapas Pandey, and one Senior Executive Officer (SEO) of Biomedical Engineering and Technology incubation Centre (BETiC) at IIT Bombay Dr Rupesh Ghayr

#### JUST ARRIVED

News Alert! Goa CM Manohar Parrikar lands in Mumbai from the US

Amitabh Bachchan PLEDGES monetary support to Army widows and farmers of India

Viral Indians: These 10 Indian internet personalities became famous for their hilarious content in no time

Jammu and Kashmir: Army soldier abducted by militants in Pulwama

Jammu and Kashmir: Militants abduct Army jawan from Shopian

#### EDITOR'S PICK

Lateral government entry: A welcome move

Trust vested interests to resist change, all chance. It is

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NEWS GOVERNANCE POLICY GOVTECH SMART INFRA INTERVIEW GOVERNANCE DIGITAL INDIA CYBERSECURITY OPINION STATES PEOPLE MOVEMENT MEITY DOPT WEB A Forum of Opportunities & Collaborations Role of PSUs in Making India Atma Nirbhar

Government News / Latest Government News / Digital India

## Coronavirus: IIT-Bombay develops 'Digital Stethoscope' for remote auscultation

The digital stethoscope, called AyuSynk, can be attached to any conventional stethoscope, to amplify chest sounds and send them wirelessly from patients to doctors without physical tubing.

Indian EXPRESS

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TOP NEWS An apology will be co

Home / Technology / Tech / An Indian rethinking of stethoscope suddenly

## An Indian rethinking of stethoscope suddenly finds relevance in covid-19 challenges

AyuSynk is a digital stethoscope developed by Ayu Devices, a start-up operating out of IIT Bombay technology business incubator, Society for Innovation and Entrepreneurship (SINE).

Written by Anuj Bhatia | New Delhi | Updated: April 16, 2020 12:50:46 pm

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June 2018 / More than just a heartbeat | JUN 22, 2018



co-founders Adarsha K and Tapas Pandey

The ubiquitous stethoscope has a very long history. It was in 1816 when French physician René Laënnec invented the device, partly driven by the fact that he was uncomfortable with the practice of doctors placing their ears on the chests of patients, especially women. Arthur Leared created a two ear piece binaural stethoscope in 1851, and the design was later perfected by George Cammann in 1852.

The stethoscope has not seen any major innovation since

Story of the day The Future Of Design – Ethereal Machines

Techtonic 2018

### More Than Just A Heartbeat

Ayu's smart stethoscopes will help in spotting cardiac and pulmonary disorders early  
Prathamesh Mulye

More From Techtonic 2018

Innovative Start-Ups — Part 3

CAMPUS HAPPENING OPINION PEOPLE NEWS #BEINSPIRED 40 UNDER 40

Invention

## These engineers created an attachment that can make any stethoscope 'digital' instantly

Called AyuSynk, the attachment can detect and record heart and lung noises and digitally transmit them – making it a boon for health practitioners in India's isolated villages

Published: 22nd May 2018