



**Report on Venture Base
 “Medical Device Hackathon (MEDHA)
 |20-21 July 2019| Venture Center, Pune|**

BRBC’S Venture Base Camp on Medtech Ideation had 2 parts. Part 1 consisted of a 1 day workshop on “Ideation & Design Thinking” held on 19th July 2019 at Venture Center, Pune.

Part 2 consisted of a Medical Device Hackathon (MEDHA), held from 20-21 July 2019 at Venture Center, Pune. The Hackathon was organized in collaboration with Biomedical Engineering & Technology innovation Centres (BETiC) of IIT Bombay, COE Pune, BJ Medical College Pune, MIT ADT Pune, Symbiosis Pune.

The aim of the Hackathon was to bring together inter-disciplinary teams (Medical, Design and Engineering) to explore medical device ideation and innovation.

The audience consisted of Doctors, Biomedical engineers, Computer Engineers, electronic engineers, Mechanical/ Production engineers and few 1st generation entrepreneurs who intend to explore entrepreneurship.





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DAY 1 :

Dr. Smita Kale opened the event by giving an overview about the Venture Center, BIRAC and BRBC followed by Dr. Rupesh Ghyar, who gave an overview about BETiC. Then Dr. Premnath spoke about design thinking. Dr. Dasmit Singh from B.J. Medical college along with team of doctors showed 18 videos that focused on clinical problems faced by a doctor in his day to day practice.

10 teams of four people each from the following backgrounds were formed:

- ✓ Medical: Biomedical / Medicine / Physiotherapy
- ✓ Design: Industrial Design / Product Design / Visual Arts
- ✓ Engineering-I: Mechanical / Manufacturing / Materials
- ✓ Engineering-II: Electronics / Instrumentation / Software





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Out of 18 unmet clinical needs posed by local doctors, the teams picked 10 (1 each), to work on during the course of the Hackathon. The students were then assigned Mentors who hand-held them throughout the entire duration of the hackathon. All the raw material (basic electronics, craft materials and a variety of junk material) was provided that could be used to create proof-of-concepts/working prototypes of solutions that would address the problem that they had identified.

- Participants worked enthusiastically for over 24 hours (throughout the night) on building their prototypes. Also high-end facilities and resources available at Venture Center like 3D printers, laser cutters, designing softwares etc and those provided by BETiC with inputs from the AutoCad support team were extensively used by the teams.
- Participants were also guided on effective presentation principles and were given pointers on how to make a strong technical pitch, so as to prepare the teams for the jury presentations on Sunday, 21st July 2019.

Advice from senior experts and mentors was also made available to the participants. Participants were guided on the design and critical technical aspects by the experts.





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DAY : 2

First half of Day 2 was given to participants to complete prototype building, as a continuation of Day 1. Participants were also asked to prepare presentations where they showcased their idea and working of the prototype.

Participants were ready with their prototypes and the final presentations by 12 noon on Sunday 21st July. Participants were ready with their prototypes and the final presentations by 12 noon on Sunday 21st July. The jury presentations were in the post-lunch session on 21st July and concluded with the final results and special excellence awards (by mentors) being announced.





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Presentation by 10 teams was held one after the other and was judged by the following panel of judges.

Dr. B.B.Ahuja	Director, College of Engineering Pune
Dr. V. Premnath	Director, Venture Center, Pune
Dr. Sanjay Gaikwad	B. J. Medical College, Pune
Dr. Ramesh Bhosale	B. J. Medical College, Pune
Dr. Rajesh Karyakarte	B. J. Medical College, Pune
Dr. Dasmit Singh	B. J. Medical College, Pune
Dr. D.R.Kabre	B. J. Medical College, Pune
Dr. M.V. Shankar	Vice President- Mahindra & Mahindra
Air Cmde Dr. S Shankar	AFMC, Pune
Dr. Renu Vyas	MIT-ADT University
Mr. A B Ramteke	Ex-Regulator at CDSCO

Judges appreciated the hardwork that participants had put in brainstorming, sketching and creating innovative fabricated prototypes. The hackathon concluded with the final results and special excellence awards (by mentors) being announced.





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Examples of prototypes developed:

1. Device to photograph & measure the accuracy and effectiveness of anti-bacterial activity with the help of a Petri dish.
2. Unmet clinical needs that were addressed included the development of a multifunctional bronchoscope, an ergonomic suction tube for microscopic surgery, an auto suturing device, a system to prevent the occurrence of bedsores, a trocar valve, a hemorrhage control device, an endotracheal tube and a nerve locator.

The participants also received a book on “The Essence of Medical Device Innovation” - by B. Ravi

Participants said that this event helped them come out of their comfort zone and work with an inter-disciplinary team of doctors, engineers and designers. They also said this event introduced them to working under pressure and come up with a viable solution considering all aspects of the problem at hand. Many participants were confident about the concept and built prototype & said that they will definitely pursue this further in the form of startups.





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Feedback scores and evaluation result

(19-21 July 2019) Medha Hackathon

Evaluation Results

Category	Avg (Max-Min) Count
Section 1 - Event	
Inauguration Session	4.5(3,5)35
Clinical Problem Videos	4.4(2,5)35
Team & Problem Solution	4.2(2,5)35
Final Presentation Selection	4.6(2,5)35
Prototype fabrication Kit	4.3(2,5)35
Stations(mech,electronics)	4.4(3,5)33
fabrication materials	4.4(3,5)35
guidance from mentors	4.5(3,5)33
Food, beverages & service	4.1(1,5)35
Accommodation facilities	3.7(2,5)33
Security & Beverages	4.0(2,5)32
Overall schedule & timing	4.5(3,5)35
Inauguration Session	
Very warm & Overwhelming.	
Good	
It was good.	
Good	



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Clear idea of scope & need in the country.
The videos went too fast. I as a designer was not used to the terms so, if you could email it just the pointers that would help.
It was a good session to get us started with.
Good
Made us to know various collaborative organizations.
It was nice & quick.
Good
No complaints.
Got to learn about the overall approach to Hackathon.
The way of techniques apart of startups, etc, also used for implementation in studies.
It's was a very good experience to me as I was attending it first time & came to know about ideation.
Clinical Problem Videos
Good method of showing problems faced, need to mention actual scale of problems.
How intense a problem solving could be.
Short but well-identified.
Great
Problems can be defined (some of) More deeply.
It would be great if we get to see the clinical problems given for other centers. So that we can have more choice for problem selection & better experience.
Very good
The structure of giving info of problem was very good.
Various areas were included which may be engineers cannot think of (to solve the problem)
Great problems, more problems should be available.
The problems were aptly described.



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Good
Gave us an insight of the daily simple yet important problems that need just some simple innovation.
Very eager to know about the problem.
Gave good understanding of the problem.
Videos were very self explanatory for someone who has no background of medical field.
Good
Exhilarating
Very much helpful to visualize the process.
Got to learn about real time problems in medical fields. Got clear functional requirements, problems about various problems.
Though problems are unknown, tried to put up in an understanding way but every field can't understand so show the body part where exactly the problem is occurring.
It is very good because we had understanding of the biological terms & concepts.
Team & Problem Solution
We had an excellent doctor with us to guide us during & throughout the session.
Good (Need software & machine learning & experts.)
Integration of various domains to address the medical issues.
Process was less fluid & more forced.
Great/Good
Team formation should allow participant to select his/her team as repetition of problem can be there.
Other domain people should also be given a choice to choose a problem.
Excellent
Very helpful, enthusiastic team.
Did not get the problem that I wanted, but eventually came up with amazing ideas for the one that I got.
Ease of process.



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Great
Too much pressure
Helped to know about each other's +ve & -ve ride during team formation.
It was fair.
It was a wonderful experience.
Instead of the doctor selecting the problems, the engineers should have the liberty to choose a problem and doctors may provide the required guidance to solve the particular problem.
good
Fair & Interesting.
Interactive session.
Got to interact with people from various backgrounds. Opportunity to quickly chalk out rough methods to solution.
A team should have at least 2 members of same. Field so that work & ideas would be more efficient and problem selection helped the throughout process very well.
It is very nice, all team members ideas & their thinking & knowledge about different domain came to know.
Final Presentation session
Well conducted.
Precise, what pitching actually is!
Best jury Interaction.
Good
Should have given more time to represent the solution properly.
Very good
Very nice & Helpful reviewer comments.
Best part of the 30 hr hackathon.
Amazing to know how the minds of different people work.



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Great presentations, jury & learning sessions.
Nice platform to bring one's idea.
Give 3-4 minutes more & process to allow every participant to speak.
All together.
Very good
No complaints.
Loved the Jury Q & A format.
Learnt about pluses & Minuses of my own project. Could hereby & Learn from other participants projects also.
Interaction with experts gives more view about the product/ideation done.
It is good, but due to less space on stage it is not at all effective.
Prototype fabrication kit
Available of ambu bag by BJ Medical, Thank you so much for the kind help & guidance.
Lots of vanity.
Enough to cover all prototyping needs.
Good
Good
Was basic, whole process challenging & fun.
Fully equipped.
Learnt so much
Made us to think innovative & broaden our views.
3 D printing & design lab was good, More materials such as vacuum generator is required.
Good
Perfect kit.
Enough & made us think creatively.



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Good, Adequate
Available everything from very basic needs.
It is very different & amazing for me.
Stations(mech,electronics)
Try to avail rubber sheet or Rough surface for machining Surface.
Good
Logistics were little confusing, single sheet info map, do’s & don’ts would have been nice.
Great
Some more sensors & controllers required to provide.
Brilliant
Got everything that was required.
Great collection of objects to think with.
All working stations- make me eager to take internship.
Pneumatics & design more & process to allow every participant to speak.
Good
More than adequate
Excellent.
Useful & Adequate
Should include more sensors & motors, also power supplies with CRO's could be more efficient than batteries.
The facility provided for all of us was very good. Satisfied.
Fabrication Materials
Great.



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Good
Trash material was really useful.
Good
Good
Good
Thoughtful & very helpful.
Excellent.
Good for Prototyping, easy mould ability in required shapes.
Guidance from Mentors
Simply kind & brilliant mind, Gaurav P & the sharp elex.expert Tapas for your help.
Excellent
Great support from everyone.
Great
Mentors should give the proper path on which team can start working.
Way better (hari OM)
Very helpful, knowledgeable & friendly had nice time.
Helped us really well.
Gave him a lot of trouble.
Excellent mentors.
Good & friendly.
The mentor was very supportive and helped us approach the solution.
Very Good
Clear, Crisp, Precise guidance.



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The best
Really Helpful.
Rohan was very helpful.
Very friendly, polite and has logical way of explanation.
Our guidance provided for all of us. Is very good & all the station are satisfied.
Food,bevarages & Service
Decent food.
Just right.
Good
Nice.
It's good, food quality & taste was awesome.
Good
Didn't like the meal on the 2nd day.
Food wasn't that great.
Food, Beverage quality needs to be improved.
Good
Good
Nice.
Great
Good & Adequate
Well Arranged.
It is amazing.



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Accommodation Facilities
I would like to thank Venture enter team, for the help & Cooperation for 30 hrs.
Not well planned. Felt awkward.
Good
Accommodation can be improved.
Good
Moderate
They could have been better.
Ok facilities.
You could have provided some extra rooms for refreshment.
Not bad
Good
Good
Great
Good & Adequate
Could have been arranged for 3 days because participants coming from far distance faced problems.
It was good for 1 day. I expected it for 3 days.
Security & Transport
Everyone was very attentive & ready to support.
Good
Good
Good
Good



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Went to IISER guest room to freshen up, there was no water supply & the card wasn't there either, so we have to walk our way back.
Good
Good
Good
Good
Great
Safe
Security & Transport is 100% good.
Overall schedule & Timing
Nearly punctual & help to moderate timings for work.
Well Conducted.
Good
We completed our prototyping at 4.30am, & we were still all charged up & experienced just by looking at the model.
Good
Finished up on promised time.
Good
Great.
Perfect planning & organizing an event.
Good
Needs Improvement.
Insanely great.
Nicely Arranged.
Really good.



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It is very good & accurate & all activities are very on time.
Please summarize your key takeaways & overall experience of MEDHA.(This is most valuable, and we may like to quote you!)
It was amazing experience to work with Unknown people of their expertise & give us opportunity to strain your brain to make something productive with avail Resources TYSM Betic team. MEDHA & Venture center for the exposure.
I liked the time pressure concept work gets only with deadline.
Analyzing problems & generating Solutions.
Very valuable experience, lots to learn.
Doing great things for Medtech innovation. Young & Experienced well balanced.
Team work, Working under pressure, coming up with valuable solution considering all aspects.
Problems can be improvised in a such a way that one can apply AI and deep learning like new tech. To solve problem.
It's very motivated & hammers our brain to think & develop device or gadget which can't be useful in medical field.
I had a very good & new experience. It was out of my comfort Zone.
It was an intense experience with lot of exposure & insight & was fun to work with all domain people and my team members.
Working under the time constraint (stress) gets the best out of you. This was best rapid learning experience which I will cherish for life.
Overall sessions were Good. Learnt many things from the perspective of Others (doctors, mechanical designers).
It was nice.
It is an innovative concept to form teams of different domains working on a single concept. I develops the attitude of team work & socializing it increases self confidence & creative thinking abilities.
Innovative or improved mechanisms can go a long way, simplifying the process by imagining domains can help in that.
It was a good experience overall.
Overall experience is really great. We learn so many things in different areas. Such events really help to our Society. Thank you all organizers & Mentors.
It was an amazing experience, always wanted to collaborate with engineers and work on something. Learn a lot about how to develop ideas, surely with comeback with great ideas and shall try for innovations too.



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A great way of amalgamating ideas of all the brilliant minds in their own field. I really think this will help to shape the minds of many youth & help the ideas to grow exponentially. Thanks a lot.
Developing a good network from various streams.
A great opportunity for introducing engineers to the medical world. Excellent management! Great mentorship by Tapas Sir.
Platform to interact with people from different fields.
Meeting new people, forming a team with them & staying awake all night in spite of feeling sleepy to develop a prototype was a one of a kind experience for me.
This event broke my wits & spirit and then build it up as we progresses ahead solving the problem.
3D Printer hats off, Great mentoring.
Resourcefulness & looking at the idea realistically practically, feasibly desirably & viably, great interactions is great environments with great individuals.
It was a very much helpful, interactive session which helped me understand how to work on a problem with multidisciplinary team.
It has been really enriching experience. Complex problems were made understandable by very useful material.
Getting to work with amazing people! Loved to see enthusiasm of everyone-eng, doctors, mentors, volunteers-everyone.
Very good initiative learnt a different kind of way, suggestions: A team should contain at least one elder as non-profession. So that no one dominates the other team members.
The college campus & canteen is very good. Very interesting quotes are there. It is a very memorable & good experience for me.

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 Venture Center, Pune