Report of

Organized by

Event Lead and Report prepared by

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Executive Summary:

The two days intensive workshop on "Design of Medical Products: Practical Insights and Lessons" jointly organized by Venture Center and TATA Trusts PATH Impact Labs (TPIL) held on Friday-Saturday, 23rd and 24th November 2018 at Venture Center, Pune, was highly successful. The workshop involved Designers, Engineers and Senior Entrepreneurs as key speakers who have used various aspects of design to develop various products, particularly in the MedTech domain. The workshop also featured a Mentor Mixer session and Open House sessions which helped to initiate a dialogue cum discussion between the entrepreneur participants and the experts / mentors.

A total of 18 speakers and additional 20 mentors together contributed their expertise to this workshop, either during the talks or during the mentor mixer and open house sessions with 6 help desks operated by Venture Center resource centers and ecosystem partners. The workshop also attracted a good attendance of participants (total number 55) from early to mid-stage startups and entrepreneurs. All the sessions were appreciated well with the overall event satisfaction score of 5.9 (which translates in the range from 'good' to 'very good'). Especially the mentor mixer session and open house sessions featuring one-on-one help desks were highly appreciated by the attendees.

Background to the workshop:

The workshop was focus on sharing practical insights in designing medical products. The objective was to help startups in the early stage of product conception, design and development to anticipate various design needs and plan a roadmap for product design.

The workshop also introduced the audience to key design trends, enabling technologies, methods, case studies and best practices, in addition to providing information and increasing awareness on various aspects of product development and validation that need early attention of entrepreneurs. In a way, the workshop served as a platform for a community with a shared interest in medical products design.

The workshop was focused on some key medical product sectors:

- Clinical grade screening, diagnostics, recording instruments
- Recreational/ popular diagnostics, wearables
- Medical devices meant for intervention/ treatments
- Surgical tools and aids
- Assistive devices and disability aids
- Molecular diagnostics
- Topical, surface, open wound products
- Implants
- Medical data and image analytics including those leveraging sensors, IOT, Big Data, Mobile, Cloud, AI, ML, Analytics, clinical decision support etc
- Medical supplies, consumables, hospital equipment etc
- Other medical devices and diagnostics

The workshop was structured to include the following key aspects of 'Design':

- Design for function, performance, quality
- Design for manufacturing and prototyping
- Design for regulations and safety
- Design for desirability and social impact (visual appeal, user friendliness, packaging, affordability, appropriateness, reach, sustainability)

Annexure 1: Workshop Outline

Time (hrs)	Topic and Contents	Venue	Faculty
Day1:			
08:30-09:00	Registration and breakfast	Lecture Theatre and Cafeteria	
09:00-09:15	Brief about Venture Center and TPIL Introduction to the Workshop	Lecture Theatre	Manisha Premnath and Satya Dash
09:15-11:15 (120 min)	Session 1: Design Thinking and Medical Products • Slot 1 (45 min) • Slot 2 (45 min) • Slot 3 (30 min)	Lecture Theatre	Manoj Kothari Biten Kathrani D Ponnuswamy
11:15-11:30	Tea break	Foyer area	
11:30-13:00 (90 min)	Session 2: Design for function, performance, quality • Slot 4 (30 min) • Slot 5 (30 min) • Slot 6 (30 min)	Lecture Theatre	Sukanta Bhatt Prakash Khanzode Nitin Sisodia
13:00-14:00	Lunch Break	Cafeteria	
14:00-15:30 (90 min)	Session 3: Design for manufacturing and prototyping • Slot 7 (30 min) • Slot 8 (30 min) • Slot 9 (30 min)	Lecture Theatre	PVM Rao C Wyawahare Aashutosh Sharma
15:30-16:00	Tea Break	Foyer area	
16:00-16:30	Venture Center Tour		
16:30-18:00 (90 min)	Session 4: Design for regulations, safety • Slot 10 (20 min) • Slot 11 (20 min) • Slot 12 (25 min) • Slot 13 (25 min)	Lecture Theatre	Rupesh Ghyar A Savargaonkar A Arunachalam Nikhil Butala
18:00-18:15	Tea Break	Foyer area	
18:15-19:45 (90 min)	BRBC Mentor Mixer focused on MedTech Product Design (Startups and Mentors meet-up) BRBC Mentor Mixer	E-Classroom	
19:45-20:00			
20:00-21:30	Networking dinner and get-together	Innovation Café and Exhibition Area	
Day 2:			
08:30-09:00	Breakfast	Cafeteria	

09:00-10:15 (75 min)	Session 5: Design for desirability and social impact (Visual appeal, user friendliness, packaging, affordability, appropriateness, reach, sustainability) • Slot 14 (45 min) • Slot 15 (30 min)	Lecture Theatre	B Mahajan Vinayak Nandalike
10:15-10:45	Tea break	Foyer area	
10:45-12:15 (90 min)	Session 5: continues… • Slot 16 (30 min) • Slot 17 (30 min) • Slot 18 (30 min)	Lecture Theatre	Arun Venkatesan Suresh Nair Nishant Kumar
12:15-12:45	Valedictory and Feedback	Lecture Theatre	Premnath V Satya Dash
12:45-14:00	Lunch	Cafeteria	
14:00-18:00	Pre-booked meetings with following Help Desks: Help Desk 1: Product Design (http://www.dominix.co/) Help Desk 2: Intellectual property (by IP Facilitation Center, IPFACE: http://www.ipface.org/) Help Desk 3: Planning for regulations (by Regulatory Information and Facilitation Center, RIFC: http://rifc.venturecenter.co.in/) Help Desk 4: Prototyping for electronics and IOT (by BMek: https://www.bmek.in/) Help Desk 5: Scientific/prototyping/analytical support at Venture Center (by Scientific & Prototyping Initiatives Team at Venture Center, http://www.venturecenter.co.in/service_offerings.php#Technical) Help Desk 6: Clinical Validation, Social Impact Funding and Design for manufacturing (by TATA Trusts PATH Impact Labs, TPIL: https://www.path.org/) and Social Alpha (https://socialalpha.org/)	Lecture Theatre New Park office (900) E-classroom Mentors Room Conference Room Training Room	Dhruva Paknikar (Dominix) Archana Joshi (IPFACE) Navnath Kadam (RIFC) Sanjay Ingale (BMek) Sujaya Ingale, Edna Joseph, Sayali Kothmire (Scientific Initiatives team) Shubham Kesharwani, Priyanka Bajaj, (TPIL), Suresh Nair

Annexure 2: List of participants with contact details

	Name	Email	Details
1.	Imran Patel	imranpatelq@gmail.com	Spicer Adventist University, Pune
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4.	Yuvraj Patil	yuvrajnpatil@gmail.com	Project Lead, MediEdge Innovations & Research
5.	Jaydeep Panchal	panchal.jaydeep@thapar.edu	Founder/ Atom embedded systems
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7.	Manoj Sanker	Manoj@nemo.care	CTO/Co-founder,NeMocare Wellness Pvt ltd
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9.	Sharadchandra Bansode	saiprasad.poyarekar@gmail.com	Founder, Pacify Medical Technologies Pvt Ltd
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Annexure 3: Speakers and Faculty (in alphabetical order of last names)

Speakers (in alphabetical order of last names)	
	**Arjun Arunachalam** Founder and CEO at Voxelgrids Innovations Private Limited Arjun is an electrical engineer trained in MRI physics with a post graduation from University of Wisconsin-Madison. Subsequently he has worked at GE Research's MRI lab in New York. He was also Assistant Professor in Electrical Engineering department at IITB. From 2014 onwards he is with Voxelgrids, which is in the business of building next generation, lightweight, compact, portable full body MRI scanners, with initial clinical installations in Bengaluru and few more in the pipeline. Voxelgrids has received support from the Foundation for Innovation and Social Entrepreneurship (Social Alpha), an initiative of the Tata Trusts.
	**Priyanka Bajaj** Manager – Health & Innovations, Impact Lab at PATH India Priyanka holds a Ph.D in Microbiology from University of Delhi. Priyanka has been a Principal Investigator under the Science & Engineering Research Board (SERB-NPDF) scheme of Department of Science and Technology (Govt. of India). She has also worked with the University of Delhi South Campus-AMR team to develop a point-of-care diagnostic for detection of antimicrobial resistance in UTI pathogens. The project received "Discovery Award 2016" as part of wider Longitude Prize from NESTA UK and DBT- BIRAC India. She brings with her expertise in molecular biology, microbial pathogenicity, rapid point-of-care diagnostics, and public health.
	**Sukanta Bhatt** Head, System Engg for Mobile Surgery C-Arm business, Philips Healthcare Innovation Center, Pune Dr Sukanta Bhatt holds a Ph.D. in Mathematics from IIT, Kharagpur. He has more than 28 years of experience spread across research, academics, Mechanical CAD, Medical Software design, validation and verification (V&V), test automation, Medical device system engineering, approbation, V&V. In his current role at Philips, he is responsible for System Design & System Release for C-Arms and Cath Labs.
	**Satyaprakash Dash** Director, Global Innovations, Impact Lab, PATH At PATH, Satya has a mandate to propel innovations in public health emerging from India to the next level. Formerly as Head Strategy Partnerships & Entrepreneurship Development at BIRAC (the nodal Indian biotech innovation agency) & as the 'Co-ordinator' of Make in India Cell in BIRAC- his portfolio included overall strategy formulation & implementation for BIRAC, early stage funding, biotech incubators, and business development & communication. He is also a Consultant (pro-bono) to KBITS, GoK advising on Biotech Policy 3.0. Previously he was a Senior Consultant at IIM Bangalore & COO of nodal biotech industry association- ABLE. He holds triple masters from University of Leicester (UK), Cambridge (UK) and Sambalpur (India) and a PhD from University of East Anglia, UK. His interests are in S&T policy design, implementation and outcomes, business of science, early stage funding, entrepreneurship, and catalysing for positive serendipity across innovation communities.

Rupesh Ghyar
Senior Executive Officer, BETiC, IIT Mumbai

Rupesh holds a doctorate degree from IIT Bombay. His PhD thesis focused on Systematic Approach for Functional and Surgical Suitability Evaluation of Mega Endo-prostheses, which involves standardization of FEA coupled with experimental evaluation. He has a Masters degree in Bioengineering, from University of Strathclyde (UK) and Bachelor's degree, in Mechanical Engineering, College of Engineering, Pune. He has worked for six years as a Senior Research Associate in OrthoCAD Network Research Cell at IIT Bombay. Earlier, he was a business development manager for OSIM India, an orthopaedic implant manufacturer.

Sanjay Ingale
Founder and CEO, BMek Tech LLP (Ecosystem partners at Venture Center)

Sanjay has more than 28 years experience in the areas of Embedded systems, Industrial Automation, Automotive Electronics, Internet Of Things, Big Data and Machine Learning. He has worked with TELCO (TATA Motors), TATA Elxsi, Satyam Computers and KPIT Cummins in the areas of automotive electronics and industrial automation product design activities Incubated and built cross-functional teams.
BMek is an IoT, Machine Learning & Big Data Solution Provider. They have strong experience in End to End System's Architecture, Design, Development, and Delivery. (https://www.bmek.in/). BMek is ecosystem partner of Venture center and provides following consulting services: Proof Of Concept, Proto-typing, Product Design, Mass Manufacturing, and Support Services, IoT System Design, Integration, Machine Learning, Data Analytics. Industries supported are Health Care & Life Science, Industrial Automation, Automotive Electronics, Medical Equipments, Semi-Equipments Mfg., BMek works on de-risking the Programs / Projects / Practices.

Sujaya Ingale
Lab Manager, Venture Center

Sujaya leads scientific Initiatives team at Venture Center. She manages scientific and prototyping resources, facilities, services and ensures Environment Health and Safety compliance at Venture Center. She is M.Sc in Microbiology from Pune University. She has several years of research experience in biotechnology projects, experience in setting up and oversight of Venture Center's Lab facilities, running and assisting in proof-of-concept projects, and in creating, planning and organizing technical and scientific workshops for life sciences students and scientists.

Aditya Ingalhalikar
Founder and CEO, Indius Medtech Pvt Ltd., Pune

Aditya is a well published Spine Biomechanist with multiple patents to his credit. He has had a decade long stellar career in the global spinal implants industry. Prior to founding his startup, Aditya was Director of Product Development at Globus Medical, the 5th largest spinal implants company in the world. He has extensive experience in taking products from concept to commercialization in the highly competitive and innovation driven global spinal implants market. He is a Mechanical Engineering and has done MS & PhD in Biomedical Engineering with a focus on Spine Biomechanics from the University of Iowa, Iowa City, USA.

Edna Joseph
Assistant – Lab Manager, Venture Center

Edna manages the Analytical Services Facility at Venture Center. She is M.Sc in Organic Chemistry (Pune University) and holds PG Diploma in Patents Law. She has demonstrated knowledge and understanding of many analytical instruments (e.g. elemental analysis, thermal analysis, chromatography etc.) She has run and assisted in proof-of-concept projects. Many technical and scientific workshops, especially those with hands-on lab exercises with lab instruments have been conceptualized, planned and organized by her.

Archana Joshi
Associate Manager, IPFACE, Venture Center

Archana holds a post-graduate degree in Organic Chemistry and completed a post Graduate diploma in Patent Law from NALSAR university, Hyderabad. She is a registered Patent Agent at Indian Patent Office. As an Associate Manager at IPFACE, her responsibilities include Patent drafting, Trademark & Copyright filing, IP training programs and workshops. Prior to joining Venture Center, she has worked as Project assistant-III at CSIR-UDRIP.

Navnath Kadam
Asst. Manager at Regulatory Information and Facilitation Center (RIFC), Venture Center.

Navnath provides leadership to the RIFC at Venture Center, Pune. He regularly advises startups on planning their regulatory roadmap and facility planning. He is developing a suite of services and resources of use to startups. He has multifaceted working experience in managing Quality and Regulatory operations at Medical Device startup Axio Biosolutions Pvt Ltd. He has completed PG Diploma in Entrepreneurship and Business Management from EDI, Ahmedabad and Master of Pharmacy with specialization in Quality Assurance Techniques from Poona College of Pharmacy, Pune.

Biten Kathrani
Biten Kathrani is the Director – R&D and NBD, Asia Pacific, Boston Scientific (BSC), Global R&D Center, Gurgaon.

As the GM for BSC R&D Global In-house Capability (GIC) Center, Biten is responsible for leading Innovation and R&D for global & emerging markets for BSC's portfolio of Interventional Cardiology, Peripheral Interventions, Endoscopy, Urology, Neuromodulation and Rhythm Management. Biten has been instrumental in building Boston Scientific's largest R&D GIC outside of USA. The site has end to end R&D capabilities for single use disposable devices and medical device software development with focus on customer insights driven innovation. In a short span of 4 years, under Biten's leadership, the site has launched 4 products, >45 patent filings and a state of the art R&D infrastructure with a team of >180 employees. Biten has been in the medical device industry for 23+ years, which includes heading medical device R&D at Johnson & Johnson in Asia Pacific. He also specializes in New Business development, Intellectual Property Analytics, New Ventures and Voice of Customer enabled innovation for medical devices. Biten holds an MBA from the ivy league Wharton Business School, M. Tech in Biomedical Engineering from IIT Mumbai; and he is a certified Patent Agent with the India Patent Office. He has launched more that 12 products and has several granted patents in his name.

	**Shubham Kesharwani** Manager – Product Engineering & Innovation, Impact Lab at PATH India Shubham graduated from Indian Institute of Technology, Kharagpur in mechanical engineering and brings with him deep expertise in product design, flow simulations, hardware control, software programming, virtual instrumentation, testingand building integrative systems. He has gained experience on interdisciplinary project implementation with the Center for Railway Research where he conceptualized a wind tunnel facility to test high speed trains, an industrial fan of 1 Megawatt and worked on rail model testing in wind tunnels.
	**Prakash Khanzode** MD, Onio Designs Pvt Ltd. Prakash is also Design Lead at AltReal Bio-Innovations. He is a Mechanical Engineer by training and has done Industrial Design from NID, Ahmedabad. At Onio, Prakash leads teams of designers & engineers to provide end-to-end innovation consulting programs in verticals like Consumer goods, Retail & Industrial products, IoT & smart products, Bio-medical innovations, Mobility solutions and Digital design.
	**Manoj Kothari** Director & Chief Design Strategist at Turian Labs, Cofounder- Zepplers, Expert innovation facilitator Manoj is a design and innovation expert with more than 2 decades of experience across industries and global brands. He leads Turian Labs, a Design Thinking and Business Innovation company, which he cofounded in 2015. Prior to this, he cofounded and led a design company Onio Design and a digital branding company ITERNIA. Manoj uses his passion and expertise in Human-centered Design, Future Megatrends & Indian philosophy to catalyse disruptive innovation and cultural-change within organisations. Manoj has also led innovation engagements with global brands like Google, Microsoft, Philips, Infosys, Volkswagen, Samsung to name a few. He is a mechanical engineering from IITB and PG from NID, Ahmedabad in Industrial Design.
	**Nishant Kumar** Founder and CEO, Embryyo Nishant leads Embryyo, a medical technology inventions company specializing in clinical need finding, inventing and commercializing novel medical devices. He is BTech-MTech in mechanical engineering from IITB. Earlier he has been associated with Medical Imaging R&D at Philips Healthcare and Agiliad. He has several awards and grants to his credit like Discovery Award 2017, BIRAC-SPARSH grant, Grand Challenges grant, Top-10 Winner at Intel-DST Innovate for Digital India Challenge to name a few.
	**Mugdha Lele** Manager - Social Innovations at Venture Center Mugdha is a Ph.D in Health Sciences from University of Pune. She has been a Chevening Rolls Royce Science, Innovation, Policy and Leadership Programme (CRISP) Fellow at the Said Business School, University of Oxford, UK during 2016, where her focus was on Social Innovations and entrepreneurship. She has also completed the Aritra Leadership Accelerator program at IIM Bangalore (with Phius Social Solutions and Dr. Reddy's Foundation) in 2017-18. She is interested to drive programs which support development of novel technology solutions for impact in the social sector.

Balakrishna Mahajan
Founder and Director, Ticket Design, Pune.

Balakrishna has graduated from the NID, Ahmedabad. He has successfully lead strategic product design development for various Indian and multinational companies over the last 16+ years. He specializes in Design research, Consumer Insights, Branding, Product positioning, Radical innovation, Understanding of user behavior, Blue sky thinking, Knowledge of Mass manufacturing processes, New product design, Manage/create transition from idea to mass production, Prototyping, Design ready for tooling, Creative Sketching and representation. Under his leadership, Ticket Design, a product, packaging and UX design company has won Red Dot award 2013, CII Design Excellence award 2013, International Appliance Design Award 2007 USA and Business World NID Design Excellence award in 2006, 2008. He has also worked with a MIT Media Lab, a spinoff USA company to create a series of wearable wireless products that featured in the TIME magazine as the top twenty products of the future.

Suresh Nair
Co-founder Design Alpha, Infopark, Kochi

Suresh is alumnus of IITB. He is an active promoter of academic industry association and mentors youngsters as entrepreneurs. He has designed and developed an extensive array of novel products with excellent global market acceptance. He led a team which OEM designed and commercialised variety of healthcare products by global giants. With 28 years of multi-industry experience he's a pioneer in advocating product designs and strategies. He has also founded Biophoton Technologies. Since his initial career at R&D Lab of Ministry of IT and NeST as Global Chief Technology Officer, he's been at the forefront of various councils and boards including Government of India R&D, Kerala Startup Mission Maker Village, CUSAT, BIS amongst many more. The DST Lockheed Martin award 2014 is one of many accolades he has received for his innovation. He has more than 107 publications, 18 patents, 3 co-authored books and more than 300 technical reports to his credit. He has been Chair of IEEE Kerala, Fellow of IETE, Fellow OSI.

Vinayak Nandalike
Co-founder, Yostra Labs

Vinayak works with Yostra Labs, a med-tech startup working on foot complications of Diabetes. He comes with rich experience in product development – from ideation to commercialization across multiple industry sectors.

Dhruva Paknikar
Principal Designer at Dhruva Paknikar Luxury Design Pvt. Ltd.

Dhruva specializes in Product Design, Model Making, Concept Generation, Experience Design, and Sketchbook Pro. Earlier he has been Creative Director at Dominix Strategic Design Pvt Ltd. He has graduated from MIT Institute of Design.

Manisha Premnath
General Manager and COO at Venture Center

Manisha holds a Ph.D in Biotechnology from University of Pune and Post-doctoral training from University of Cambridge, UK. She has been a Chevening Rolls Royce Science, Innovation, Policy and Leadership Programme (CRISP) Fellow at the Said Business School, University of Oxford, UK during 2015 where she had the opportunity to study technology innovation ecosystems. She has research experience in biotechnology, microbiology, fungal biotechnology, molecular biology and molecular virology. She has experience in planning and setting up of advanced scientific facilities and program management.

Desegan Ponnuswamy
Associate Director, Digital Services, PWC

Desegan is a Mechanical Engineer by training with a Post-graduation from IIM-Lucknow. He has over 12 years of experience with a blend of industry and management, technology & experience consulting. His experience in the domains of auto, retail, pharma, engineering and manufacturing is focused around digital transformation and user experience.

P V M Rao
Mehra Chair Professor in the Department of Mechanical Engineering at IIT Delhi

Dr. P. V. Madhusudhan Rao presently also heads the Department of Design. He is a co-founder of Assistech lab in Khosla School of Information Technology, IIT Delhi which works towards development of assistive technologies for empowerment of visually challenged. He was instrumental in development and commercialization of Smartcane™- an innovative assistive device for visually challenged that was funded by Wellcome Trust, UK. He has also been responsible for initiating and driving multiple programs in design, innovation & entrepreneurship for students.

Arvind Savargaonkar
Founder & CEO at Streben Healthcare Pvt. Ltd., Chennai

Arvind is a Med Tech specialist with 25 years of experience. He is an early entrepreneur to venture into Med Tech space in 1993, before the globalization and digital era reached India. He founded and built a medicaldevices SME taking it to a customer base of 3000+ hospitals across India through indigenous development of affordable medical products. He has also founded and built an embedded software technology venture that catered to embedded and communications technology leaders in USA. Arvind currently leads a Med Tech startup in the mental stress measurement technology domain. He is passionate about building affordable and scalable solutions to deliver benefits of advancements in medical technology and help the cause of prevention of lifestyle diseases. He is also part of the mentoring team at IIT Madras Incubation Cell and is mentoring IIT Madras incubated startups and aspiring student entrepreneurs By training Aravind is an Electronics and Telecommunication Engineer with MTech from IIT Madras in Solid State Technology.

	**Aashutosh Sharma** DFM Specialist, Biosense Technologies Pvt Ltd Aashutosh is an Instrumentation Engineer by training with a Post-graduation in Biomedical and instrumentation. Earlier he has been co-founder and CTO at Actofit wearables.
	**Nitin Sisodia** Founder and CEO, Sohum Innovation Lab Nitin's startup is a social enterprise working to develop novel solutions to improve health & income of people living in underserved regions. He is a 2010 Stanford India Biodesign fellow. In 2013, he was named as one of the top 20 Indian innovators by MIT Tech review. He received NASSCOM ICT led healthcare innovation award in 2016, Indian Merchant Chamber Inclusive Innovation award in 2015 & the Sankalp India award. He has received several grants including the Grand challenges Canada Star in Global health, Center for Innovation in global health award, BIRAC's Biotechnology Ignition Grant & Siemens grant for his work to develop an innovative hearing screening device for newborns. He is an Electrical Engineer and has doe Industrial Design from NID Ahmedabad. His interest in aesthetics and precision product engineering led him to join Maruti- Suzuki, where he designed cars for India and Japan markets. He gives consultation to Zeiss, a Germany based high precision optics manufacturer to make vision care solutions reach under-served regions in India and also is an innovation consultant to Mckinsey& Co.
	**Arun Venkatesan** Villgro, CTO & Health Practice Lead at Villgro Innovations Foundation Arun leads the health sector investments at Villgro. He has over 15 years of experience in materials R&D, device development and forward integration of technology into tangible, marketable entities. He has a Ph.D. in Chemical Engineering and has done post-doctoral research in fuel-cell materials development and micro-fuel-cell fabrication. After about 2 decades of product development work in the US, he has been working in the Chennai Area for the last 5 years. He has worked for various small-scale and start-up companies both in the US and India, in a product development capacity leveraging academic research groups and independent development teams. He has extensive experience coordinating development projects using external vendors for rapid turn-around of various product components. His current focus is the development of affordable and sustainable products for BoP. More recently, his teams have successfully commercialized 'Brilliance - A low cost phototherapy device for premature babies' and 'SmartCane - An affordable navigation aid for the visually impaired'. He is also part of three projects in assistive devices funded by Wellcome Trust.
	**Premnath Venugopalan** Founding Director of Venture Center and Head, NCL Innovations Premnath holds a B.Tech from the Indian Institute of Technology - Bombay and a Ph.D. from the Massachusetts Institute of Technology, USA. He has also been a Chevening Technology Enterprise Fellow with the Centre for Scientific Enterprises, London Business School and Cambridge University, UK. He brings with him considerable experience in technology development and commercialization, working with start-up companies (in Cambridge-UK and India) and engaging with large corporations on research and consulting projects as project leader.

	**Chandrashekhar Wyawahare** Director, Futuring Design Pvt. Ltd. Chandrashekhar specializes in Industrial design, Architecture, Design Strategy, 3D Modeling, Rendering, Innovation, Design Research, Design Education, Design Workshops. He is a trained architect with M.Des in Industrial design from IITB. Earlier he has been a partner in Fomo prototyping workshop and founder partner at i design. Under Chandrashekhar's leadership, Futuring is now widely recognized for innovation and for New Product Development. It is an award-winning industrial design firm, with studios in Mumbai and Pune, focused helping clients minimize risk, speed up time to market, and deliver results.

Annexure 4: About the Organizers

About the organizers	
PATH	**About Tata Trusts PATH Impact Labs (TPIL)** PATH, in partnership with Social Alpha, has set out on the mission to accelerate new medical technology adoption in public healthcare and to propel affordable healthcare solutions through a range of activities and programs organized under the umbrella of the Tata Trusts PATH Impact Lab (TPIL). TPIL will identify and support MedTech products with a potential to positively impact the healthcare landscape in India and beyond. It will supportmedtech startups in product development, clinical trial design and implementation, standardsand regulatory compliance, risk management and quality control, global certifications, needs analysis, usability study, business model, market dynamics and funding support. For more information, visit: https://www.path.org/
BioIncubator at Venture Center Supported by BIRAC Bio-NEST	**About Bio-NEST (Bioincubator), Venture Center** The BIRAC Bio-NEST (Bioincubator) at Venture Center aims to nucleate and nurture technology and knowledge-based enterprises leveraging knowledge in the areas of biotechnology (biopharma, agrobiotech, industrial biotech, clean technology), biomedical engineering/devices/ diagnostics, biomass value addition/ renewable fuels/chemicals/materials, bioinformatics, bio/medical services and related disciplines. Created with support from DBT-BIRAC under the Bioincubator Support Scheme. For more information, visit: http://www.bioincubator.venturecenter.co.in/
BRBC A BIRAC - Venture Center Initiative	**About BIRAC Regional Bio-Innovation Center, Venture Center** BIRAC Regional Bioinnovation Centre (BRBC) is the third regional centre of BIRAC and is located in Venture Center. BRBC aims to fill up key innovation ecosystem gaps for bio-based industry sectors and thus significantly impact the translation of high quality innovative ideas into viable and sustainable business enterprises. Some key BRBC initiatives are Venture Mentoring Service; Venture Base Camps; Regulatory Information and Facilitation Centre; Bio Incubation Practice School For more information, visit: http://www.brbc.venturecenter.co.in/
NIDHI CENTER OF EXCELLENCE @ Venture Center	**About NIDHI-CoE, Venture Center** The National Science and Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology, Government of India has awarded Venture Center with the status of a NIDHI-CoE (National Initiative for Developing and Harnessing Innovations — Center of Excellence an umbrella programme conceived by DST). This award is accompanied by a grant of Rs. 50 Cr for 5 year duration to help Venture Center scale-up its activities and demonstrate greater success to accommodate more than 100 startups at any time and to upgrade and add new facilities for supporting science and technology based startups. For more information, visit: http://nidhicoe.venturecenter.co.in/

Supported by	
PATH	**About PATH** PATH is a global organization that works to acceleratehealth equity by bringing together public institutions,businesses, social enterprises, and investors to solve theworld's most pressing health challenges. With expertise inscience, health, economics, technology, advocacy, anddozens of other specialties, PATH develops and scalessolutions—including vaccines, drugs, devices, diagnostics,and innovative approaches to strengthening healthsystems worldwide. For more information, visit: https://www.path.org/
VENTURE CENTER	**About Venture Center** Entrepreneurship Development Center (Venture Center) – a CSIR initiative – is a Section 25 company hosted by the National Chemical Laboratory, Pune. Venture Center strives to nucleate and nurture technology and knowledge-based enterprises by leveraging the scientific and engineering competencies of the institutions in the Pune region in India. The Venture Center is a technology business incubator supported by the Department of Science & Technology's National Science & Technology Entrepreneurship Development Board (DST-NSTEDB). Venture Center focuses on technology enterprises offering products and services exploiting scientific expertise in the areas of materials, chemicals and biological sciences & engineering. For more information, visit: http://www.venturecenter.co.in/

Annexure 5: Workshop evaluation

Category		Avg(Min- Max)Count				
Section 1 - Event administration & Facilities						
1	Quality of pre-event (registration, queries)	5.0(1,7)27	**1**	Bad	**2**	Well below average
2	Quality of Staff responsiveness	6.1(4,7)27	**3**	Below average	**4**	Average
3	Pace of the event (time mgmt)	5.6(4,7)27	**5**	Good	**6**	Very Good
4	Quality of Food & Bevarages	5.5(2,7)27	**7**	Excellent		
5	Venture Center facility (Was it appropriate,clean & comfortable)	6.1(5,7)27				
6	Overall satisfaction with event organization	5.9(4,7)27				
Section 2- Sessions & Mentor Mixer Showcase			**Would you like to get notified about similar events from Venture Center**			
1	Session 1: Design Thinking & Medical Products	5.7(3,7)26	Yes		25	
2	Session 2: Design for function ,performance,quality	5.9(4,7)25	No		0	
3	Session 3: Design for manufacturing & prototyping	5.9(4,7)26	No reply		2	
4	Session 4: Design for regulations,safety	6.1(4,7)26				
5	Session 5: Design for desirability & social impact	5.8(4,7)26				
6	BRBC Mentor Mixer showcase	5.6(4,7)15				

Annexure 6: Workshop feedback

Comments & Suggestions. Please include if the talk met your expectations.	
	What did you enjoy the most ?
1	Content of the talks,Cases tudies,networking.
2	Design Thinking
3	Entire Event: talks & topics, speakers were very elaborate
4	session on regulations and safety
5	The enthusiasm of speakers to share their knowledge & experiences.
6	Talks by entreprenuers.
7	Interaction with mentor & startup, Investor case study.
8	Design functionality, performance.
9	Design thinking & Medical Products. Time management by Dr.Satya Dash
10	Variety of speakers & the cool atmosphere maintained by the organisers :Dr.Dash & Dr.Premnath
11	Design for desirability & Social Impact
12	Manoj Kothari,Biten Kathrani & Sukanta Bhatt
13	Nitin sisodia was to the point, presented it very well, finished on time, content was perfect.
14	Quality interactions with speakers.
15	Manufacturing & Prototyping & regulations & Safety Sessions.
16	The information of products & their Manufacturers/Teams & regulations, cases/examples.
17	Structure of Workshop & lecturers.
18	I enjoyed design thinking aspects, regulation & safety discussions.
19	Mentor mixer showcase
Please suggest a topic on which you wish to have a workshop on?	
1	Digital Healthcare (ML,IOT,AI)
2	Business models for medical devices
3	Risk management
4	Regulations & safety,ethics
5	Maintaining SOP's for medical device start-up.
6	Design for manufacturing & drafting regulation documents.
7	Raising funds.
8	Design for manufacturing & Assembly
9	Design for regulations,csafety
10	ISO 13485, EMI/EMC standards Workshop
11	Actual Prototyping (Medic Way)
12	Technology development
13	IoT from prototype to production & Drafting your drawn patterns.
14	Everything about Medical devices from idea to commercilization in Indian Context.
15	Agro Business
16	Regulatory requirements, funding for startups
17	Guidance on regulatory body & all stakes relevant to regulatory bodies.
18	Specialised biosensor devices based on Nanoparticles.
How did you hear about the workshop ?	
1	Linkedin, VC account (3)
2	VC mailing List

3	linkedin (from Dr.Premnath Post)
4	VC Website (3)
5	Biolmed
6	VC mailing List (10)
7	IIT-B (2)
8	Newspaper (2)
9	Connected to VC for BIG, hence getting all communication.

BRBC Mentor Mixer Showcase

Section 1 – Mentor Mixer Showcase

		Yes	Maybe
1	Was the mentor mixer Showcase helpful	14	1
2	Was the mentor selection relevant (only for participants)	10	2
3	Would you like to attend more of such showcases	11	3
4	Did you get an opportunity for peer to peer interactions	10	3

Section 2 – Going further, which areas would you like specific advice/help on?

1	More connects with mentors.
2	Advise on regulations & added aspects for design for regulations.
3	Many companies are working on recombination proteins & modified micro-organisms,when they will enter manufacturing, then environmental & bio-safety clearance might be needed. Thus,workshop on environmental clearance & bio-safety clearance might be helpful.
4	design of manufacturing, prototyping & regulation.
5	DFMA, FMEA, PLM
6	Actual Practical design Workshop.
7	As a Entreprenuer we go through lot of challenges, struggles. So now can relate it to all those who wish to start their journey, it would be interesting to talk about the journey from innovation idea to go to market.
8	IP, Regulatory, Collaborations with academic/licensing, Grant-Writing.
9	Regulatory Class & devices.
10	Core-electronics systems, Ranges of Products.
11	I would like to get venture center help in designing a prototype in medical diagnostics. Specifically, I need help in embedding nanoplastics on chip/paper surface & utilising this concept as an analog biosensor in detection of specific targets.

Additional Comments

1	Please improve audio system.
2	Need to focus on specific mentor key points. Workshop had exposure of common points in many mentor presentation.
3	Nice event organisation.
4	Thank you so much! Really Helpful.
5	Great to hear from all one's who have contributed in make-in-India.
6	More events like this throught the year.
7	Speakers were not-audible to last row in the hall, as output was given to video recording. Technically poor management is been observed.

Annexure 7: Feedback for Help Desks

Helpdesk 1: Product Design					
Evaluation Results					
Category	**Avg(Min-Max)Count**				
Section 1 - Event administration/facilities		**Rating Scale**			
Overall satisfaction	6.6(6,7)6	**1**	Bad	**2**	Well below average
Quality of discussion	6.5(5,7)6	**3**	Below average	**4**	Average
Content of discussion	6.5(5,7)6	**5**	Good	**6**	Very Good
Rate of the level to which it met your expectation	6.5(5,7)6	**7**	Excellent		
Comments and Suggestions					
With their monthly design subscription plan they are mitigating the finanacial constraints that start-ups usually face & that is something great I believe.					
15 min, good for introduction					

Helpdesk 2: Intellectual property					
Evaluation Results					
Category	**Avg(Min-Max)Count**				
Section 1 - Event administration/facilities		**Rating Scale**			
Overall satisfaction	6.4(5,7)10	**1**	Bad	**2**	Well below average
Quality of discussion	6.2(5,7)10	**3**	Below average	**4**	Average
Content of discussion	6.1(4,7)10	**5**	Good	**6**	Very Good
Rate of the level to which it met your expectation	6.0(4,7)10	**7**	Excellent		
Comments and Suggestions					
Archana Ma'am at this helpdesk is very helpful & able to communicate effectively.					
Scope for follow up communication can be established in there events. It was a very helpful interaction, Thanks					
Good interaction.					

Helpdesk 3: Planning for regulations					
Evaluation Results					
Category	**Avg(Min-Max)Count**				
Section 1 - Event administration/facilities		**Rating Scale**			
Overall satisfaction	6.2(4,7)9	**1**	Bad	**2**	Well below average
Quality of discussion	6.2(4,7)9	**3**	Below average	**4**	Average
Content of discussion	6.3(4,7)9	**5**	Good	**6**	Very Good
Rate of the level to which it met your expectation	6.1(4,7)9	**7**	Excellent		
Comments and Suggestions					
Very helpful person-right attitude					
15-a bit short time, but hopefully can continue the conversation in future.					
Good guidelines for implementation					
Navnath at this helpdesk really helped understand this regulatory requirements in vary elaborative way. Thank You very much					

Helpdesk 4: Prototyping for electronics & IOT					
Evaluation Results					
Category	**Avg(Min-Max)Count**				
Section 1 - Event administration/facilities		**Rating Scale**			
Overall satisfaction	6.2(5,7)9	**1**	Bad	**2**	Well below average
Quality of discussion	6.2(5,7)9	**3**	Below average	**4**	Average
Content of discussion	6.1(4,7)9	**5**	Good	**6**	Very Good
Rate of the level to which it met your expectation	6.1(4,7)9	**7**	Excellent		
Comments and Suggestions					
Thanks to Mr.Ingale, very supportive & Helpful reception too.					
Very Useful Thanks					
Sanjay sir is very soft spoken & gentle personality. It was a pleasure to have conversation with him.					

Helpdesk 5: Scientific/prototyping/analytical support					
Evaluation Results					
Category	**Avg(Min-Max)Count**				
Section 1 - Event administration/facilities		**Rating Scale**			
Overall satisfaction	6.6(6,7)10	**1**	Bad	**2**	Well below average
Quality of discussion	6.7(6,7)10	**3**	Below average	**4**	Average
Content of discussion	6.6(6,7)10	**5**	Good	**6**	Very Good
Rate of the level to which it met your expectation	6.8(6,7)10	**7**	Excellent		
Comments and Suggestions					
Has very useful & helpful understood the support mechanisms in Venture center.					
Superb! Keep it up					
Very co-operative mentors.					
Keep it up great work.					
Very nice receptive! Thanks to Sujaya & Edna Ma'am.					

Helpdesk 6: Clinical validation, Social impact funding & Design for manufacturing					
Evaluation Results					
Category	**Avg(Min-Max)Count**				
Section 1 - Event administration/facilities		**Rating Scale**			
Overall satisfaction	6.7(5,7)11	**1**	Bad	**2**	Well below average
Quality of discussion	6.7(5,7)11	**3**	Below average	**4**	Average
Content of discussion	6.4(5,7)11	**5**	Good	**6**	Very Good
Rate of the level to which it met your expectation	6.5(5,7)11	**7**	Excellent		
Comments and Suggestions					
Good & welfare interaction.					
Really fruitful discussion! Thanks to Dhruv, Dr. Nair & Social alpha team member.					
Informative Guidelines.					
Dr. Nair enlightened me with DFM Priorities and I am very thankful to him, for this help.					
Was a bit confusing as 3 different topics were together but, nice & useful interaction.					

Annexure 8: Event photographs


VENTURE
CENTER


Technology
Innovation
Enterprise


VENTURE
CENTER


About Biosense
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Technology
Innovation
Enterprise
Seeding Tomorrow
Enterprises Toda


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