Siddharth K. Jabade, PhD (IIT Bombay)

Founding Vice Chancellor, Vishwakarma University

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Education

- ✓ **PhD** from **Indian Institute of Technology (IIT) Bombay,** Department of Mechanical Engineering**,** July 2006; *Advisor: Professor Milind Rane*
- ✓ **ME** (Mechanical-Heat Power), University of Pune, August 1998
- ✓ **BE** (Mechanical), University of Pune, August 1993
- ✓ Qualified Patent Agent in India with registration number IN / PA / 969

Professional and Academic Experience (selected)

- ✓ Founding Vice Chancellor, Vishwakarma University, Pune, India – Click for details
- ✓ Professor in Mechanical Engineering, Vishwakarma University
- ✓ Dean, Alumni and International Relations, Vishwakarma Institute of Technology, Pune (through April 2017)
- ✓ Site Director, National Science Foundation (NSF, USA) Center for Energy-Smart Electronic Systems (ES2) in collaboration with State University of New York at Binghamton. The center was based in Vishwakarma Institute of Technology (through 2017) - click for details
- ✓ Mentor in Empowered Expert Committee (EEC) constituted by Institutions of Eminence Secretariat, University Grants Commission. The EEC mentors the identified Institute of Eminence (IoE) Institutions in their journey to world ranking ladder. (2019)
- ✓ Board Member, Investronaut, an incubator established by Vishwakarma Group
- ✓ Coordinator, "Intellectual Property Rights Facilitation Centre" at Vishwakarma Institute of Technology, Pune
- ✓ Faculty for patent drafting in "Advance Training of Examiners" at Rajiv Gandhi Institute of Intellectual Property management and Patent Information System (RGNIIPM). It is the Central Government Organization. The advance training is conducted for newly recruited Examiners of patents & Designs in the Indian patent Office
- ✓ Visiting Faculty, Institute of Intellectual Property Studies (IIPS), Mumbai

- ✓ Director, Innovation and Intellectual Property Rights at AIT Consulting, Asian Institute of Technology based in Bangkok, Thailand

- ✓ Affiliated Faculty, School of Engineering & Technology and School of Environment, Resources and Development at Asian Institute of Technology

- ✓ Visiting Faculty, Asian Institute of Technology, Bangkok (Course AT79.03 "Intellectual Property Rights for Technology Development"

SECTION 1: INTERNATIONAL ENGAGEMENT / GLOBAL EXPOSURE (SELECTED)

- ✓ Member of the Technical Advisory Group to review proposals under the "Reinvent the Toilet Challenge: India" funding opportunity announced by Biotechnology Industry Research Assistance Council (BIRAC) with support from Department of Biotechnology and the Bill & Melinda Gates Foundation (2014)

- ✓ International Expert (Innovation and Intellectual Property) in Academic Innovation Assistance Programme to establish Establishment of a systematized innovation and intellectual property management system including development of Intellectual Property Policy for Sultan Qaboos University, Muscat, OMAN. (2014 -2017)– Click for details

- ✓ Advisor and lead for the mission initiated by the Prime Ministers office of Cameroon. It related to develop and implement innovation policy and procedure regarding Information Communication Technology (ICT) related mission in Bamenda region in Cameroon. It included establishment of a University and Industry collaboration platform, policy development, capacity development plan and implementation for ICT in the Bamenda region through University of Bamenda. (2016 till date)– Click for details.

- ✓ International Consultant to Asian Development Bank (ADB) for preparation of Sanitation Business Plans for 4 national centers under South Asia Urban Knowledge Hub (2014)– Click for details

- ✓ Lead international expert identified by UNESCO to contribute on innovation and intellectual property aspects in the publication related to "Meeting Water Challenges in Developing Countries" (2015)

- ✓ Resource Person to conduct training sessions on Intellectual Property Rights in the workshop at Hyderabad, organized by the World Intellectual Property Organisation (WIPO), Geneva (2007)

- ✓ International expert and consultant to provide inputs for National Policy of Science, Technology and Innovation for Cambodia (2013)

- ✓ Advisor for Business Development, Innovation and IPR for Neon Infotech South East Asia based in Bangkok, having offices at Korea, Myanmar, India and Dubai (2013-till date)

- ✓ Visiting Faculty, Asian Institute of Technology, Bangkok (Course AT79.03 "Intellectual Property Rights for Technology Development" conducted in March-April 2011 and March-April 2012)

- ✓ Coordinator for Engineering Programme at Ras Al Khaimah, UAE at the offshore campus of University of Pune (2009)

- ✓ FIAT International at ISVOR FIAT spa, Turin, Italy in 1998 as trainer in their "training programme" to develop prospective employs for their India Greenfield Project for manufacturing of world car PALIO and SIENA. (1998)

SECTION 2: FOUNDING VICE-CHANCELLOR VISHWAKARMA UNIVERSITY, LEADERSHIP ROLE

- ✓ Vishwakarma University, Pune is established in May 2017 as a State Private University (www.vupune.ac.in)

- ✓ Implementation of new undergraduate, post graduate and PhD programmes in the field of
  - Art & Design
  - Pharmacy
  - Humanities and Social Sciences
  - Law & Governance
  - Science & Technology and the Emerging Technologies
  - Commerce & Management
  - Interdisciplinary Studies
  - Journalism Media and Communication.
  - Architecture

There are 45+ degree granting programmes.

- ✓ Student Enrollment
  - Student enrolment increased by 40% per year of operation—even during the pandemic
  - Effective faculty recruitment has increased by more than 40% over last year
  - In 2017 (founding year) of VU there were 273 students. VU has currently more than 3500 students.

- ✓ Physical and Digital Infrastructure
  - Physical infrastructure was enhanced by 30%.
  - The digital infrastructure growth was more than 50% due to effective integration of VOLP, EasyParksha and Digital Marking systems
  - Incubation Centre approved by the Central Government of India
  - VU Centre of Communication for Development
  - Establishment of VU-Digital, an learning and outreach initiative for offering value added professional development certificate programmes using digital eco-system.

- ✓ Fund Raising

- Funds generated through increase in the student enrollment and thereby revenue. There was concomitant growthof revenue on the order of fifty times since year one.
- WILO Foundation has funded to the tune of INR 20 million for the Water Centre of Excellence and the technology development initiative
- A Gift Award is established worth Five Million Singapore Dollars to this effect from Nanyang Technological University (NTU) Singapore.

✓ Internationalization
- Collaborations established in Canada, USA, Africa, Europe, Korea, Singapore, Thailand and UK.
- Collaboration with Nanyang Technological University (NTU) Singapore for VU faculty capacity development, Innovation access and Student Mobility.
- Collaboration with Harvard Business School (HBX) online

✓ Transformative Research and Innovation Ecosystem

Collaborative transdisciplinary centres of excellence to foster transformational research, and innovation to interface with industry / society. The centres include:
- VU-Binghamton University Design Thinking and Innovation (In collaboration with SUNY Binghamton)
- SAP i-360 Innovation Centre of Excellence (In collaboration with SAP)
- VU-WILO Water Quality Centre of Excellence (with WILO Foundation, Germany)
- VU-IQUBE Centre for Innovation and IPR
- VU-IES Ecocampus Centre of Excellence (with Integrated Environmental Services)
- EDGE (Emerging Digital Grid and Mobility) (with AFaren, Singapore)
- Centre for Industry 4.0 (C4i4) (With Altizon, Accurate, Kirloskar group)
- VU- Unity Centre of Excellence in Augmented Reality, Virtual Reality and Mixed Reality (with Unity Technologies, USA)

✓ International Recognition

VU is shortlisted in the 'Excellence and Innovation in the Arts' category in the Times Higher Education (THE) Awards Asia -2022 , also known as the 'Oscars of Higher Education'. VU is among the two universities shortlisted as finalists from India in this category. VU is the youngest University to be shortlisted in this category from India.
[https://timesofindia.indiatimes.com/home/education/news/vu-shortlisted-in-excellence-and-innovation-in-the-arts-category/articleshow/90719228.cms]

Vishwakarma University (VU) is ranked among the top 200 world universities in the prestigious Times Higher Education Impact Rankings 2021 for the work related to Affordable and Clean Energy. VU is the youngest the only private university from the western region in India to secure this top rank.

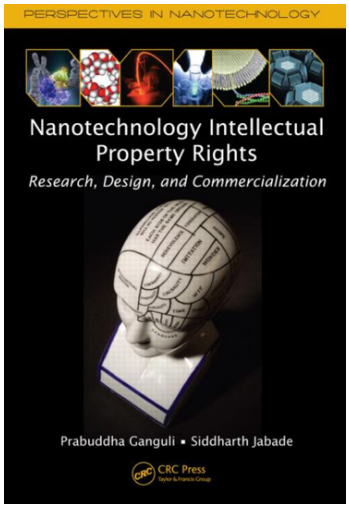
"U Multirank World University Ranking" an independent ranking prepared with seed funding from the European Commission's Erasmus+ programme.. VU emerged successful competing with 1,759 universities across 92 countries including 15 from India (including IITs and IISC).

VU is probably the youngest participant. VU scored very good on indicators including graduating on time, student internships in the region, student to faculty ratio, student engagement, and graduating on time

- ✓ National Recognition
  - VU School of Management designated as one of India's top 2 emerging management schools in the AICTE-CII Industry linkages.
  - VU secured the Emerging University of the Year award in Western India ASSOCHAM's 13th Higher Education Conclave 2020.
  - VU was awarded the Emerging University of the Year in Western India at the ASSOCHAM's 13th Higher Education, Skill and Livelihood Conclave 2020. The Associated Chambers of Commerce and Industry of India (ASSOCHAM) is oldest, leading, largest and apex Chamber of Commerce and Industry of India.

SECTION 3: BOOKS AND PATENTS

- ✓ S. Jabade and P. Ganguli; **Nanotechnology Intellectual Property Rights: Research, Design and Commercialization**; CRC Press, Taylor & Francis Group; Boca Raton, (2012) ISBN 9781439855287, co-authored, *published in July 25th 2012*



Demystifying the accelerating research and product development process of nanotechnology, this book employs illustrations and lucid explanations to examine the integration and exploitation of intellectual property rights (IPR) as a tool in research and development, technology transfer, and safe commercialization.

Requiring no prior legal experience of readers, it illuminates the nuances and integral role of IPR in technology development, from product inception through commercialization.

This indispensable book destroys illusions in the minds of stakeholders and builds confidence to establish a framework for an agile, working model for product development.

- ✓ S. Jabade, G.L. Hornyak, W. Kanok-Nukulchai and K. Rana; **Foundations of 21st Century Curriculum: Emerging Technologies, Humanities and the Augmented Age**; Manuscript submitted for publication (2021).

- ✓ Shraddha Khamparia, Siddharth Jabade, Shrikaant Kulkarni, Priya Nakade, Dhananjay Bhatkhande, Book Chapter Title: "IoT for Water Management: A Sustainable Solution" in a book entitled **"Internet of Things Applications for Sustainable Development"**; BOOK SERIES: Internet of Things: Data-Centric Intelligent Computing, Informatics, and Communication.; CRC Press, Taylor & Francis Group; Accepted for Publication

- ✓ Shraddha Khamparia, Siddharth Jabade, Shrikaant Kulkarni, Priya Nakade, Aishwarya Khadse; Chapter 7 : Promoting CES to accelerate a net-zero transition in developing economies; Book Title: **Circulating and Ecological Sphere**: Concept and

Applications (Book Proposal by IGES, Japan); Book Series: Science for Sustainable Societies; Publication: Springer; Communicated on 8th September 2021

Patents

- ✓ Title: "Freeze concentration technology application in Vertical Sewage Treatment Plant to generate potable water; Inventors: Siddharth Jabade, Hemant Watve, Dhananjay Bhatkhande, Pranav Dhaneshwar; Patent Application Number: 202121043907
- ✓ Title: "The Novel Anaerobic System In Vertical Sewage Treatment Plantr; Inventors: Siddharth Jabade, Hemant Watve, Dhananjay Bhatkhande, Pranav Dhaneshwar; Patent Application Number: 202121043877
- ✓ Title: "Vertical Sewage Treatment Plant"; Inventors: Siddharth Jabade, Hemant Watve, Dhananjay Bhatkhande, Pranav Dhaneshwar; Patent Application Number: 202121043909.
- ✓ Title: "The Modified Aerobic Reactor In Vertical Sewage Treatment Plant"; Inventors: Siddharth Jabade, Hemant Watve, Dhananjay Bhatkhande, Pranav Dhaneshwar; Patent Application Number: 202121043910.
- ✓ Title: "Freeze Concentration System", Inventors: Prof. Milind V. Rane, Siddharth K. Jabade; Granted Patent No: 204956
- ✓ Title: "Energy Efficient Concentration Process of Sugarcane Juice in Sugar Manufacture"; Inventors: Prof Milind V Rane, Siddharth K Jabade, T. S. Ingle, Granted Patent No: 209956
- ✓ Title: "Novel Solar Fluid Heating Device", Inventor: Siddharth Jabade, Prof. G. S. Tasgaonkar; Patent Application Number in India: 1950/Mum/2006
- ✓ Title: "A Construction Structure and a Method of Making Thereof", Inventors: Praful Naik, Sthapit Gyanendra, Jabade Siddharth, Amatya Sudiksha, Acharya Kiran, Jaengjit Preecha, Jaengjit Chalard; Indian Patent Application Number: 1031/KOL/2014
- ✓ PCT patent application: PCT/IB0125/057728 entitled "A Construction Structure And Method of Making Thereof" which was subsequently filed under national phase in various countries
- ✓ Title: "Compacted Intermeshing Blocks Enabled Natural Onsite Integrated Sanitation System For Residential And Non-Residential Purpose", Inventors: Koottatep Thammarat, Naik Praful, Jabade Siddharth, Sthapit Gyanendra, Atitaya Panuvatvanich, Nawatch Surinkul; Patent Application no: 201621026061
- ✓ Title: "A system for vehicle tyre identification, authentication and pressure monitoring", Inventors: Khare Chetan, Jabade Siddharth; Indian Patent application number: 201721029247
- ✓ Title: "Freeze Concentration Technique"; Inventors: Jabade Siddharth, Sahasrabudhhe Abhishek, Desai Ranjit: Indian Patent application number 410/MUM/2012

- ✓ Title: “A sensing system and a method for acquiring and analyzing parameters of environmentally controlled spaces”; Inventors: Chetan Khare, Siddharth Jabade; Indian Patent application number: 201721031969

- ✓ Title: “Data center environmental parameters measurements and analysis”; Inventors: Chetan Khare, Siddharth Jabade: Indian Patent application number: 201721031968n

SECTION 4: SPECIAL ACHIEVEMENTS, TECHNOLOGIES AND INNOVATIONS

Smart Gram: Affordable Housing and Sanitation Integrated Community Housing Technology

Co-inventor, Intellectual property and commercialization strategy mentor in an onsite sanitation integrated community housing technology. A Project of National Importance: Ideation to Impact innovation value chain in collaboration with Asian Institute of Technology, Thailand and Prashak Techno Enterprises Pvt. Ltd..

- ✓ The mission of the project was to develop an appropriate housing platform invention that enabled natural materials research, practical but advanced construction methods, environmental sustainability and realization with commercialization potential. The vision was of outreach in order to create a large impact for the benefit of country's people in need and this platform gives the impetus for such core level research, innovation and implementation.

- ✓ During the assignment as the director of Innovation and Intellectual Property at the Asian Institute of Technology (AIT), Thailand, developed the innovation strategy, the technology adaptation and proliferation blueprint along with the integration of Intellectual Property protection for this technology at AIT.
    - The target was to create an apt platform wherein the value chain of the invention that starts in the academia (laboratory), reaches out to the public (land) to create a larger impact (by technology proliferation through deployment and scaling), he added. To achieve the target, Prashak Techno Enterprises Pvt. Ltd. in India, was identified and invited and shouldered with the responsibility of enabling this technology in India and other parts of the world.

- ✓ The Ministry of Housing & Urban Affairs’ Affordable Sustainable Housing Accelerators (ASHA) award was given to Prashak Techno Enterprises Pvt Ltd. on January 1, 2021 at the hands of Prime Minister Narendra Modi.

    - I am the co-inventor and have devised the innovation and intellectual strategy for this technology. I am on the member of Prashak’s Advisory Board.

    - For this technology solution, as lead and co-inventor, successfully completed the technology readiness cycle integrated with intellectual property strategy, commercialization and further proliferation through right collaborations to achieve an impact. Strategized and enabled partnership between AIT and Prashak Techno Enterprises to enable technology solution outreach and deployment.

- Following are the details in the process:
  - Contribution in design and development of natural wastewater treatment solution
  - Integration of the wastewater treatment solution with soil-system compacted brick construction
  - Ideation, adaptation and innovation strategy formulation to enable this innovative technology proliferation to Indian context
  - Design of experiment and analysis to substantiate the inventive step for the said bricks
  - Contribution in the design and development of machines that are used to manufacture the intermeshing soil-cement blocks
  - Identification of the technology proliferation firm in India, strategizing and enabling the collaborations with Asian Institute of Technology to ensure technology is implemented in India
  - Strategizing the patent application filing in India and Patent Cooperation Treaty (PCT) member countries

Deployment at the President Estate, Deharadun

- ✓ This technology is also deployed in President of India President's Estate located in Dehradun. The Honorable President of India Shri Pranab Mukherjee laid the foundation stone for the project on the 27 September 2016 and subsequently the completed project inaugurated by him on the 10 July 2017. Details

- ✓ This Technology solutions got the opportunity for further proliferation based on the concept of SMARTGRAM initiative of President Office. The term SMARTGRAM is conceived by me. 100 villages in Gurugram district of Haryana state were approved for development by the Indian government

- ✓ The technology is best described as an onsite sanitation-integrated earthquake-proof community housing technology. The structural housing material consists of compacted interlocking blocks (bricks) that are manufactured on site and made from local soils. The blocks are reinforced with vertical steel bars (or bamboo) and require no conventional beams, columns or a concrete lintel for support. Cavities within the matrix provide for the facilitation of natural air flow that provides barriers against temperature extremes, noise and water penetration. The sanitation technology, researched at Asian Institute of Technology (AIT) Thailand and at Pune's Vishwakarma University was integrated in a manner that resulted in a well-rounded ecosystem for living, for healthcare and for overall well-being.

- ✓ This is worth considering a success story of the much-talked academia and industry interaction. This innovation and IP integrated model has enabled ideas and inventions to reach out to the society. Pune based Vishwakarma University, known for the innovation ecosystem has a collaboration with Prashak, to further develop and deploy this technology for the larger good
- ✓ A special link is provided below.
  http://timesofindia.indiatimes.com/articleshow/81507117.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

Honorable former President of India Shri Pranab Mukherjee. Prof. S. Jabade is in his right side during the inauguration project.

An onsite natural integrated disaster-resilient building structure deployed at the President's Estate in Dehradun, India is depicted.

Founding Site Director National Science Foundation Center for Energy-Smart Electronic Systems (ES2) in collaboration with State University of New York at Binghamton, USA (2016)

- ✓ Founding member and based out of Vishwakarma Institute of Technology collaboration with State University of New York at Binghamton, USA
- ✓ First and only international site outside the USA under the framework of the Industry/University Cooperative Research Center (I/UCRC) of National Science Foundation Details.

- ✓ This ES 2 Centre of I/UCRC is the cooperative effort between government, universities, and industrial members that conduct precompetitive research in the area of energy-smart electronic systems that meets the needs of industry, government and students through interdisciplinary collaboration, productive partnerships, dedicated expertise, accessible leading-edge facilities and innovative educational programs. Industry/University.

- ✓ The Center members were Facebook, Bloomberg, IBM, Comcast, CommScope, Corning, Degree Controls, DVL, Future Facilities, Internap, Mestex, MicroCool, Panduit, QuantaCool, Rambus, Sealco, Steel ORCA, Triad, Verizon.

- ✓ The I/UCRC in Energy-Smart Electronic Systems works in partnership with industry and academia to develop systematic methodologies for operating electronic systems and cooling equipment synergistically, as dynamic self-sensing and self-regulating systems that are predictive, stable and verified in real time. The center brings together computer scientists, mechanical and electrical engineers in a synergistic multi-disciplinary team to address these issues.

- ✓ Other university ES2 partners included The University of Texas at Arlington, Villanova University, and the Georgia Institute of Technology.

Spin-off Company established based out of the Innovations from ES2 Centre

- ✓ Co-inventor, co-founder and mentor for ideation to commercialization of an innovative datacenter temperature and monitoring wireless smart sensing system in association with Logicare Embedded Systems, a member company of the ES2 Centre.

- ✓ A spin-off company named Craidlr was established with a co-founder (Mr Chetan Khare) for commercialization of this sensing system.
    - o The innovative solution provided by virtue of sensing the environmental parameters, intelligently synthesising the sensed parameters in the context of the usage and predicting the patterns.
    - o It enables details insights and visualization of energy consumption behavior of systems enabling reduced energy consumption by virtue of informed decisions for operations.
    - o It is a well-established fact that in a data centre, equipment energy consumption is 45% and cooling system consumption is 50%. The innovative sensors and the solution used in the data centres has a great potential to reduce energy consumption up to 25% by virtue of controlled on-demand cooling using the sensors and the intelligently synthesized parameters. The reduction in energy consumption reflects on the reduction of carbon foot print to make green data centre operations.

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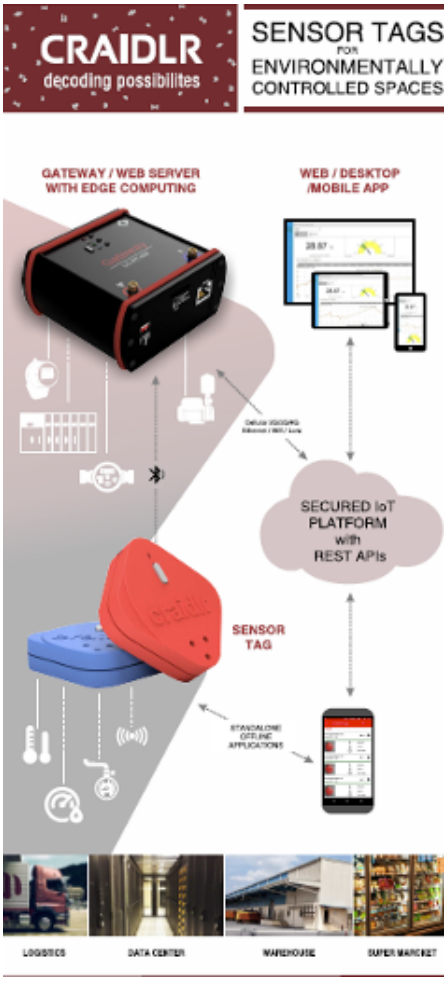

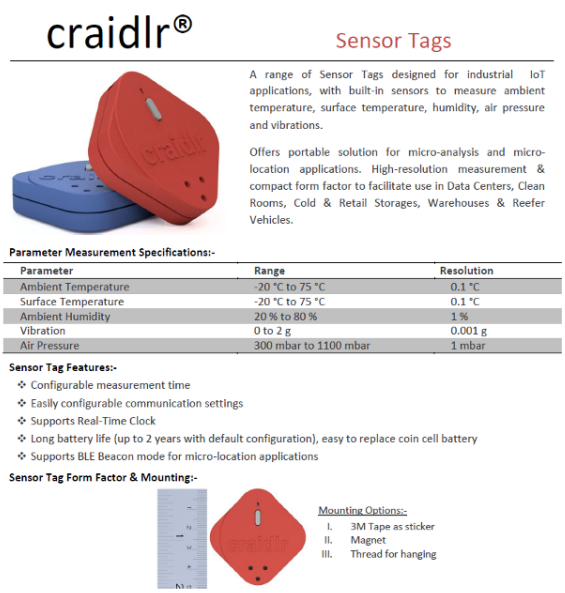

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- ✓ Indian autonomous scientific society, operating under the Ministry of Electronics and Information Technology.
- ✓ These inventions were conceptualized, innovation strategy was developed, prior art search and analysis was conducted to establish the novelty and inventive step, Intellectual Property portfolio strategy including patent application families and claims protection was developed. The patent applications were drafted and filed. This entire technology and product development followed technology readiness levels. The proof of concept was presented in the ES2 Conference in the Binghamton University, USA wherein it was well appreciated by the industry partners and other centres.

Other Knowledge Products of ES 2 Centre

- ✓ N. Jagdale, B. Sisodiya, P. Chiarot, S. Jabade, K. Sant, M. Chaudhari (2017) "Heat transfer analysis of a cold plate" International Conference on Recent Trends in Engineering and Technology organized at VIIT, Pune in association with IEEE Pune and Savitribai Phule Pune University (formerly known as University of Pune)
- ✓ Organisation of a Symposium for industry on: "Electronic Cooling and Packaging & Design Optimization: A Value Proposition for Industry" held in Persistent System Limited, Pune INDIA with industry participation from Pune (March 25th 2014) featured invited talk by Professor Bahgat Sammakia and Prof Krishnaswamy Srihari

on the Value Proposition for Industry in the field of Thermal management, Data Centre Cooling, Design Analysis, FEA, CFD. It helped in member company identification and participation of member companies and initiation of the process of ES2 Center which was formed in March 2015 at Vishwakarma Institute of Technology Pune.

- ✓ Initiation of the project with member company CDAC (membership initiated in June 2015) and the project entitled "Thermal and Flow Analysis of Data Center Using Hybrid Cooling (Air and Water)"
- ✓ Initiation of the project with the member company Logicare Embedded Systems the (membership initiated in June 2015) and the project entitled "Data Center Temperature Monitor Analysis System"
- ✓ Initiation of the project with the member company Innovative Technomics Limited (membership initiated in June 2015) and project entitled "Investigations on FCMA Soft-Starter Based Compressor Employed in Refrigeration System for Data Center Cooling".
- ✓ Organisation of International Conference on Research Trends in Design, Analysis and Manufacturing of Mechanical Systems" in collaboration with State University of New York at Binghamton and Anveshak with the participation of industry, March 15, 2012 to establish the aspect of the collaborative center and ES2 member company outreach.

SECTION 5: BLENDING INNOVATION, INTELLECTUAL PROPERTY RIGHTS IN EDUCATION

AIT Consulting (currently AIT solutions) in the Asian Institute of Technology, Thailand (2012-13)

- ✓ "AIT Consulting is the consulting arm of AIT established to effectively interface with industry Governmental, Intergovernmental and other organizations to facilitate professional services based on the vast AIT expertise. It offers technological and engineering solutions through its five focus areas of Technology, Engineering, Environment, Development, and Management."

- ✓ In the capacity of Director Innovation and IPR, the key functions and responsibilities included:
  - Conceptualization, development and drafting innovation led concept notes, project proposals, inception reports, business cases
  - Provide expert advice to integrate innovation and IP aspects for appropriate business strategy in proposals

Strategizing innovation and Intellectual property Rights in the reinventing toilet project funded by Bill and Melinda Gates Foundation to AIT

- ✓ The project entitled "Sustainable Decentralized Wastewater Management in Developing Countries" (PI: Professor Thammarat Koottatep) focused on innovative solutions that work for the bottom billion poor's

- ✓ The goal was be to catalyze the commercialization of novel, superior decentralized systems aimed at radically improving sanitation for the poor, particularly in urban areas.

- ✓ Established Intellectual Property (IP) enabled integrated structured innovation management for effective ideation to commercialization.

- ✓ The structured and systematic well defined innovative approach is embarked in this project included
  - o Technology comprehension and deep interactions with the researchers to appreciate the technology fields to bring in synergy in research and technology development
  - o Defining technology boundaries and scope to conduct targeted patent search
  - o Study and analysis of prior art including patent document, papers, any published matter
  - o Use of paid patent databases to extract maximum prior art available
  - o Analysis of the prior art by researchers as well as Techno-legal experts
  - o conceiving ideas
  - o evaluating novelty and inventiveness of the perceived solution
  - o tailor inventive steps in the solutions
  - o evaluate techno-commercial viability
  - o Use IP protection without compromising on "accessibility" of the technology to urban poor. This means that IP Protection would not impede arriving at a socially just pricing for urban poor.

- ✓ Internalization: Inhouse capacity development for IP protection
  - o Conventionally the IP protection and search is carried out using external agencies due to lack of internal competent well groomed human resource.
  - o It adds to cost and reflects in the technology / product cost ultimately.
  - o My involvement as the techno-legal expert from AIT itself as an integral part of the team.
  - o It enabled continual interaction with the researchers to synergies embedding aspects of the IP in the research as a natural process than the afterthought.

- ✓ Socially Responsible IP Led Research and Technology Management
  - o It is perceived that due to IP protection cost of the product enhances leading to impede "Accessibility" of the product to poor.
  - o However, the current research is targeted to develop "innovative appropriate technology"; protect intellectual rights and yet make it "affordable". T
  - o This was the very genesis of integrating the IP aspects right from very early stage of research with in-house expertise and not as an afterthought that would result in escalating technology and thereby product cost.

Operational framework for this project comprised of the following:

- ✓ Patent Landscapes as an ongoing process:
  - o It included not only prior art, in particular patent search but the interpretation of the results in the context of technology development objectives.
  - o It included development of Technology Map, Assignee Analysis.

- ✓ Continual interaction of internal IP expert with researchers:

- The patent search and analysis inputs are provided dynamically at every stage in the current phase.
- There was an interaction with the researchers / inventors.
- Matrix Maps were developed based on the analysis of the prior art to provide a very comprehensive and yet concise understanding / insight in to technical problems and approaches used to solve them.
- It helped deepentechnology insights of the inventors/ researchers.

✓ Tailoring inventive solutions during the course of research:
- To make the innovations commercially viable technology solutions, it was necessary to work through work the inventions through the intense IP grid to avoid infringement issues.
- The strategic decisions on the IP protection were necessary to arrive at during the early course of the research and development.
- The continuous interaction with the inventors, assignee analysis and freedom to operate support for the conceived inventions is provided in this project from the phase itself.

Development of Intellectual Property Policy and Procedure for AIT

✓ Developed and implemented systematized policy driven process for invention disclosures, maintaining lab notebooks, respecting and following confidentiality protocols.
✓ The appropriate Non-Disclosure Agreements developed and are worked out with contractors, sub-contractors and third parties.
✓ A documentation management system was established for the enabling disclosures as well as maintain confidentiality and data security.
✓ The members of the team were trained to this effect.

Innovation Strategy, IP and Commercialization of "An onsite natural sanitation integrated disaster-resilient building structures technology solutions using locally available soil"

✓ Protection strategy, inventor contribution in the development of an inventive aspect of the Habitech technology
✓ Integration of onsite sanitation system developed by Professor Thammarat and team at AIT in the housing (Habitech) technology
✓ Drafting and filing patent applications for these technology platforms
✓ Identification of the commercialization and deployment partner and enabling deployment of this technology
✓ Formalization of the agreements
✓ Recognition of this technology in India at the President's Office and The Ministry of Housing & Urban Affairs' Affordable Sustainable Housing Accelerators (ASHA) of Prime Minister of India

Selected Projects and Proposals

✓ Business concept and inception proposal to establish AIT Online Learning System (AIT-Online), currently known as AIT Share
✓ Design and development of quality management system
✓ Business Creation Centre for AIT to institute an integrated and structured innovation management process for effective ideation to commercialization.

- ✓ Technology Visioning proposal for CP Foods in Thailand
- ✓ IPR Enabled MDG attainment submitted to World Intellectual Property Organisation (WIPO)
- ✓ Proposal for Petroleum Development Oman relating to the technology for utilization of produced water of Petroleum Development Oman's mining sites to produce value added products for the Sultanate of Oman.
- ✓ Proposal submitted to ADAPT Asia-Pacific relating to the development of a strategic plan for applied climate change research in Thailand
    - o Contribution in the concept note development for AIT Regional Hub proposal relating to Water, Sanitation and Hygiene

Innovation and Intellectual Property Rights Management at Centre of Excellence in Nanotechnology at AIT (2010-12)

- ✓ Implementation of such Innovation Management in Center of Excellence in Nanotechnology (CoEN) at Asian Institute of Technology based in Thailand
  Objective was to establish innovation process for faculty, students and researchers for early identification of potential inventions to enhance commercial success through establishment of sustainable network involving diverse stakeholders / funding agencies. Innovation management process was targeted to:
    - o Set up a system for the protection of the innovations in CoEN through strategic patenting processes.
    - o Strategize publications in journals and patent application filing
    - o Create a technology marketing scheme including the mapping of a network of stakeholders to outreach the developed technologies in CoEN and Identify potential commercialization partners
    - o Design an effective "*Technology Portfolio Documentation"* for Marketing of the innovations.
    - o Provide a value added service by identifying patentable innovations and draft appropriate patent applications for filing
    - o Implement the "IPRinternalise®" model and train the researchers on techniques of patent search, evaluation of prior art so that they are able to design their research activities to lead to patentable and non-infringing inventions.

- ✓ Five patent applications were drafted and filed that included technical discussions with inventors, training inventors to document technical disclosures of inventions, training inventors on prior art search and how to analyse patent documents, drafting of patent application, interaction with the technology transfer office and patent office personnel from National Science and Technology Development Agency (NSTDA) of Thailand

- ✓ Technology portfolio was designed and developed for the CoEN based on identified inventions as well as protected technologies. The Technology Portfolio release function was organized

- ✓ Establishment of a system to conduct a project-wise due diligence of the research activities at the CoEN to:
    - o categorize the technologies
    - o evaluate the novelty, Inventive steps and industrial applicability of each invention and to access the patentability of the inventions

- organize systematic documentation of the categorized technologies for the preparation of a technology portfolio brochure
- map and identify potential partners for commercialization
- identify partners and funding agencies
- plan a mega event for the marketing of the technology portfolio of CoEN

International Expert on Intellectual Property at Sultan Qaboos University, Sultanate of Oman (SQU) (2014, 15, 16)

- ✓ International IP Expert to provide innovation and IP assistance and to develop a program
- ✓ Mission included
  - drafting and implementing Intellectual Property and Innovation policy.
  - Establish and promote a structured innovation and Intellectual Property (IP) management system at the Technology Transfer Office (TTO) for effective ideation, harnessing, protecting innovations and paving path for commercialization
  - To establish and promote Patent Search and Analysis Facilitation Cell with a
    - aim to provide integration of patent search and analysis in the on ongoing research and teaching activities to provide valuable actionable intelligence to SQU community enabling innovations, technology development and path-breaking research.
    - Internalisation of the patent search and analysis process by developing capacity and competence of SQU staff and faculty
    - Initiate process to train the researchers on techniques of patent search, reading patent documents in the context of research to enable researchers to design their research activities to lead to patentable and non-infringing inventions; Strategize publications in journals and patent application filing;
    - Develop a course related to IPR in SQU to enable "Internalisation" of innovation process and IP creation.

Identification of inventions, patent application drafting and filing

- ✓ Initiate process of integrating innovation and IP process in research and development by identifying inventions at an early stage; Identification of the inventive step; Prior art search analysis
- ✓ Drafting of the patent specifications (Patent specification) A pilot project related to nanotechnology in one of the centres in SQU, wherein entire ideation to patent application filing process is enabled using the said TTO system, process and procedure as an evidencing

Capacity development: Training of faculty teams to internalise processes

- ✓ Training sessions for faculty and staff in patent search, patent document interpretation from research perspective, patent landscaping and analysis using free patent search facilities (such as www.uspto.gov, www.freepatatentsonline.com, www.espacenet.com, and other) to begin with to understand, appreciate and develop patent search concepts and skills. Two training sessions of 3 to 4 days each depending on requirement.
- ✓ Live case study of patent search, analysis for inventions of relating to nanotechnology

- ✓ Patent search and analysis in the context of the technology / scientific domain by understanding and appreciating inventor / researcher's perspective and purpose (through interaction)
- ✓ Patent search in the context of the invention / proposal based on the discussion and thorough study of invention disclosure form
- ✓ Patent analysis comprising technology map, matrix map, summary to assist inventor / researcher in
- ✓ Realization of novelty, direction of technology and status of his / her research and get new ideas
- ✓ providing direction towards developing original and novel research / technology development by overcoming reinvention

Lab to market: Commercialization strategy

- ✓ Development of a strategy and execution map for the commercialisation of the protected inventions
- ✓ Development of a technology portfolio for the protected inventions

"IPRinternalise™" Model in Technical Education

- ✓ Recognizing that education should facilitate the creation of learning and thinking minds with ability to develop and apply the acquired knowledge for societal benefit, a lead programme, "IPRinternalise™" was initiate in collaboration with Dr Prabuddha Ganguli to inculcate cohesive abilities of problem definition and solving, observation, exploring existing knowledge domains to seek solutions and then integrating them to synthesis viable solutions.
- ✓ Integration of IPR in technical education is well received and was part of the Technical Education Quality Improvement Programme in the State of Maharashtra

SECTION 6: CONSULTING on TECHNOLOGY, INNOVATION and INTELLECTUAL PROPERTY

Information Communication Technology (ICT) mission initiated by the Prime Ministers office of Cameroon (2016 till date)

- ✓ Advisor and lead
- ✓ Development and implementation of innovation policy and procedure regarding developing the Bamenda Region in Republic of Cameroon in the domain of Information Communication Technology (ICT) with University of Bamenda (Uba) as the focal point.
- ✓ The scope included
  - Preparation of Business / Operational Plan for UBa Consult, an autonomous enterprise to be establish within the UBa framework, established to foster innovation by seamlessly connecting with the industry, other organisations and society.

- Capacity development programme for technicians, administrative support. Implemented the University of Bamenda faculty and technician capacity development programme by deputing the trainer from India.

Left; His excellency, the Prime Minister of Cameroon. Right: His excellency Governor of Bamenda Region

Business plan development for innovation and industry participation enablement: UBs consult

- ✓ Developed a strategic, operational and financial aspects to lay blue print for establishment of UBa Consult as an "ICT Knowledge Seat" which is an "enterprise" of "national pride" that contribute in building human capital, innovation potential and an enabling environment for ICT industry revolution in the Bamenda region for sustainable socio-economic development. The said business plan enabled:
  - Identification of resource needs and preparedness attributes to establish UBa consult.
  - Spelled out Value Proposition for stakeholders including Government, Industry, Academia, Inventors
  - Assisted in "High Level Strategic Decision Making" for financial, institutional and human resource mobilization for short term (5 year) and long term vision
  - Established a foundation for harnessing opportunities to create opportunities for sustainability

- ✓ Uba Consult as an enabling company within the framework of University of Bamenda was established to foster innovation and industry connect with the following objectives:
  - Consultancy body offering services across on all sectors of all areas of education and businesses including : ICT, strategy, policy, curriculum design, economic, financial, technology, human resource, project management, niche sectors , general, etc;
  - Knowledge Seat and nucleus of all-inclusive holistic innovation eco-system to support industrialization and services by developing clusters and incubators for development by proliferation of technology, training and capacity building
  - ICT a nucleus to develop the IT sector with the objective of transformsing Bamenda into ''Bamenda Silicon Hills" in the like of the "Silicon Valley" in Bangalore, India.
  - Enabling and facilitating the transfer and transmission of generated knowledge in the UBa to society in order to contribute in eradicating poverty by supporting

development of a well-groomed human resource to enable that enhances accelerated and job-generating growth,

- Contributing towards the development of innovation capacity, human and social capital for enhancing productivity and competitiveness in Cameroon,
- Contributing in increasing, extending and improving the professionalization of social services sectors, including: agriculture, health, education, training, water, electricity, roads, housing, marketing etc., and equal access to such services to enable all round regional development.
- Contributing in the decentralization of industries and services in the national and regional context by assisting in the development of innovation- driven enterprises by enabling participation of bottom of the pyramid in the innovation value chain to address unmet needs of the country.

Engagement with Asian Development Bank (ADB) (2014)

✓ A consulting assignment to support preparation of a reparation of Innovative Sanitation Business Plans for 4 National Centers under the Proposed South Asia Urban Knowledge Hub (International)

✓ The main objective of the Knowledge Hub:

- Build capacity to generate and apply knowledge to city management according to principles of sustainable development and to influence policy and decision-makers in this direction.
- Facilitate information and experience exchanges within South Asia for city managers, utility staff, policy makers, academia and private sector to improve the urban environment and services delivery.
- Strengthen national centers' skills for outcome-oriented research and influencing intended audiences.

✓ This specific engagement involved supporting the capacity of the four (4) national centers (Bangladesh, India, Nepal and Sri Lanka) to improve their skills in outcome-oriented research and knowledge management specifically in innovative sanitation; and further build their capacity to influence policy makers and practitioners through evidence-based policy advocacy.

✓ A portion of the K-Hub's activities were dedicated to urban sanitation; to build capacity of the national centers to be knowledge management leaders on this topic. Innovative, urban sanitation is being broadly defined as including (a) new technologies, (b) pro-poor technologies or service delivery solutions, (c) septage management, (d) decentralized systems and (e) innovative service delivery mechanisms – e.g. in terms of partnerships with the private sector, cost effectiveness or new business models. It does not include traditional water-borne sewerage systems and treatment plants.

✓ Following were the deliverables:

- Developed a 5 year, detailed sanitation business plans for each of the four national centers (in Sri Lanka, Nepal, Bangladesh and India)
- Worked closely with each national center to (a) assess their current capacity for innovative, urban sanitation knowledge management; (b) identify their capacity and resource needs; (c) identify strategic partnerships (nationally, regionally and

globally) to build their capacity and professional network for innovative, urban sanitation knowledge management, and (d) develop a business plan with time-bound milestones for developing their skills to be knowledge management leaders in innovative, urban sanitation.

- Developed a budget for capacity needs; and help national centers to identify priorities for sanitation-related activities to be funded (e.g. themes for research, workshops, twinning, etc..).

- Each of the tailored, sanitation-specific business plans for each of the four national centers was incorporated into the overall K-Hub business plan. The business plan included actions and commitments to be taken by the national center to build their capacity for innovative sanitation knowledge leadership.

Expert opinion in Patent Litigation

Provided support as a technical expert in patent infringement cases.

✓ Intellectual Property Appellate Board in the case of Tata Chemicals Vs. Hindustan Unilever Ltd. Order (No. 166 of 2012).

Patent Application Drafting and Filing Consultancy

✓ Involved in drafting and prosecuting patent applications. Provided support as Technical Expert in patent infringement cases and drafted numerous patent applications (300 plus) in diverse technology fields in India and abroad.

✓ Innovation led project proposals and business development
✓ Advisor to Mahindra & Mahindra, Mumbai on Innovation and Intellectual Property Rights Management
✓ Advisor to Bilcare Ltd, Pune on Innovation and Intellectual Property Rights Management
✓ Senior Associate at VISION-IPR, Mumbai a leading IPR consulting firm of Dr. Prabuddha Ganguli, who is internationally known Technology Transfer and IP consultant
✓ Advisor to Hayes Lemmerze Ltd Pune on Innovation and Intellectual Property Rights Management
✓ Advisor to Innoventive Industries Ltd. Pune on Innovation and Intellectual Property Rights Management
✓ Advisor to Dr. Sanjeev Vasa, Ahmedabad on Innovation and Intellectual Property Management
✓ Company trainee in Cummins India Limited and worked in assembly section and machine shop of V 28 model diesel engine manufactured for export.

SECTION 7: PUBLICATIONS and INVITED SPEAKERS

Papers Published

✓ Satpute, N., Jugulkar, L., Jabade, S., Korwar, G., & Arawade, S. (2022), Design and analysis of motion and energy regulating vibration harvester. *Proceedings of the*

Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, 236(3), 1391-1405.

- ✓ Satpute, N.; Dhoka, P.; Iwaniec, M.; Jabade, S.; Karande (2022), P. Manufacturing of Pure Iron by Cold Rolling and Investigation for Application in Magnetic Flux Shielding. *Materials* 2022, 15(7), 2630; https://doi.org/10.3390/ma15072630.

- ✓ Agarwal, T., Singh, B., Kapadnis, C., Bartake, R. K., Nikam, R., & Jabade, S. (2022). Music Engagement and performance on Gardner's Intelligence Scale among Adolescents. Journal of Positive School Psychology, 6(3), 2596-2605.

- ✓ Hemlata Karne, Dhananjay Bhatkhande, Siddharth Jabade, "Mesophilic and thermophilic anaerobic digestion of faecal sludge in a pilot plant digester", International Journal of Environmental Studies, 2018, Vol 75, pp 484-495.

- ✓ N. Jagdale, B. Sisodiya, P. Chiarot, S. Jabade, K. Sant, M. Chaudhari (2017) "Heat transfer analysis of a cold plate" International Conference on Recent Trends in Engineering and Technology organized at VIIT, Pune in association with IEEE Pune and Savitribai Phule Pune University (formerly known as University of Pune)

- ✓ Abhishek Sahasrabudhe, Ranjit Desai, Siddharth Jabade, "Modeling and Simulation of a Freeze Concentration System for Sugarcane Juice Concentration", International Journal of Modeling and Optimization (IJMO), 2011, Vol. 1, no. 2, pp. 118-121.

- ✓ Jabade Siddharth, Abhyankar Hemant, Ganguli Prabuddha, "Model IPRinternalise™ – Integrating Intellectual Property Rights in Technical Education", World Patent Information, 2008, Vol. 30, pp 220-224.

- ✓ Jabade Siddharth K., Abhyankar Hemant, Ganguli Prabuddha, "Seeding and nurturing creative minds……. Integrating Intellectual Property Rights in Technical Education", Research Global, 2007

- ✓ Rane Milind V., Jabade Siddharth K., Freeze Concentration of Sugarcane Juice in a Jaggery Making Process, Applied Thermal Engineering, 2005, Vol. 25, pp 2122-2137.

- ✓ Rane Milind V., Jabade Siddharth K., "Sugarcane Juice Concentration: A New Approach", International Sugar Journal, 2005, Vol. 107, pp 476-482.

Manuscript submitted

- ✓ Satpute, N., Dhoka, P., Arawade, S., Jabade, S., Shinde, N., Iwaniec, M. (March 2022) . Finite Element Analysis of magnetic shielding for a miniaturized MEMS displacement sensor. Communicated to XVIIIth International Conference on Perspective technologies and methods in MEMS design, Polyana (Zakarpattya), Ukraine. 18 - 22 May 2022.

- ✓ Satpute, N., Arawade, S.,Karande, P., Jabade, S., Shinde, N., Iwaniec, M. (March 2022) . Magnetic Shiedling of Linear Variable Differntial Transformer with Pure Iron Foils. Communicated to XVIIIth International Conference on Perspective technologies and methods in MEMS design, Polyana (Zakarpattya), Ukraine. 18 - 22 May 2022.

- ✓ Satpute, N., Joshi, A., Utpat K., Kulkarni, N., Buddhi, D., Jabade, S., Selmoker, P., Chavan, U. (March 2022) Preparation of biological micro powder based epoxy composite with improved damping factor and investigation for application in a MEMS sensor packaging. Communicated to 4th International Conference on Intelligent Engineering and Management in Association with IEEE United Kingdom and Ireland Section, 27th - 29th April 2022.

- ✓ Satpute, N., Gurav, O., Walame, M., Korwar, G., Jabade, S., Khule, A., Channapattan , R. (March 2022) Preparation of biological micro powder-based epoxy composite with improved damping factor and investigation for application in a MEMS sensor packaging. Communicated to 4th International Conference on Intelligent Engineering and Management in Association with IEEE United Kingdom and Ireland Section, 27th - 29th April 2022.

- ✓ Agarwal, T., Singh, B., Kapadnis, C., & Jabade, S.(2002). Influence of Music Listening and Coping Strategies among Male and Female Adolescents during COVID-19 Pandemic, International Social Science Journal. (Under review)

- ✓ Agarwal, T., Singh, B., Kapadnis, C., Bhonsale, I., & Jabade, S.(2002). Effects of Music Listening on Coping Strategies and Multiple Intelligence in Music-Experienced and Music-Non Experience Adolescents, Anxiety, Stress, & Coping (Under review)

- ✓ Nakade, Priya; Bhatkhande, Dhananjay; Deosarkar, Manik ; Jabade Siddharth ; Khamparia,, "India's Water Health: Region Wise Water Quality Assessment of Treated and Untreated Water", ACS ES&T Water; Manuscript ID: ew-2020-00058b

Invited Speaker / Keynote Address

- ✓ Keynote address at the event "Linking Oman's Higher Educational Institutions with the Public and Private Sectors", Muscat, Oman organized by Sultan Qaboos University, May 7th 2017.
- ✓ Invited speech in the International Conference on Current Trends in Engineering, Science and Technology", Kasetsart University, Bangkok, Thailand, January 6th 2017.
- ✓ Keynote address at the event "Collaborations for Innovations" at Asian Institute of Technology, Thailand organized by AIT Solutions, May 12th and 13th 2016.
- ✓ Invited talk at the IGSTC Indo-German Workshop at Bochum Germany, 24th and 25th February 2016.
- ✓ Invited talk at KTH Royal Institute of Technology, Sweden on 29th February 2016.
- ✓ Keynote address The 2nd Asia Pacific Water Summit (2nd APWS) at International Convention and Exhibition Centre, Chang Mai, Thailand; May 17th 2013; Technical Workshop on Creative Water Management for Development: Innovative sanitation, Conflict resolutions and Integrated health risks; Intellectual property interventions for creative water management

- ✓ Invited speaker on Intellectual Property Rights in the World Innovation Day in Poland in September 2010 (organized by the Marshall office of Wilkopolska region)
- ✓ Invited as resource person by World Intellectual Property Organization (WIPO) for the workshop entitled "Train the Trainers" in Hyderabad (August 13 – 17th 2007)
- ✓ Invited talk at The Patent Office, London in a conference entitle "Engineering Enterprise through IPRs" on 17th May 2007
- ✓ Keynote speaker, IUCEE Annual Leadership Summit 2020, 10-12 July, 2020, Virtual platform
- ✓ Keynote speaker, CII-IGBC's Igniting Young Minds on Sustainability, 5 June, 2020, Pune
- ✓ Speaker, ASSOCHAM's 13th Higher Education, Skill and Livelihood Conclave: Future of Higher Education and Skill 2030, 25-26 February, 2020
- ✓ Panelist, CII Industry-Academia Conclave 2019: Breakthrough to Excellence - Exploring Collaborations, 19 December, 2019
- ✓ Keynote speaker, VU-NTU Symposium: Preparing for a Sustainable Future, 5 December, 2017
- ✓ Keynote speaker, CIAN MIG Impact Summit on Industry 4.0, 8 September 2018

Conference Presentations

- ✓ Abhishek Sahasrabudhe, Ranjit Desai and Siddharth Jabade "Modelling and simulation of a freeze concentration system for sugarcane juice concentration", 2011 Conference on Mechanical, Industrial and Manufacturing Technologies (MIMT) cosponsored by IEEE , Singapore.

- ✓ Presented paper in International Conference on Engineering Education 2008 held at Pecs, Hungary entitled "Making Engineering Curriculum Relevant and Need Based Yet Stress and Burden Free … An Experiment"

- ✓ Presented papers in ICEE 2009 held at Seoul, South Korea in entitled "Preparing Well Groomed Human Resource for the Engineering Institution …. An Experiment and "Introduction of Global Collaborative Design Projects to Undergraduate Students Produces Positive Educational Results".

WORKSHOPS, PANELS and TRAINING

- ✓ Panelist, CII Industry-Academia Conclave 2019: Breakthrough to Excellence - Exploring Collaborations, 19 December, 2019
- ✓ Designed and conducted a State Level Workshop on "Promoting Intellectual Property Rights Awareness in Technical Education" under Technical Education Quality Improvement Programme (TEQIP)
- ✓ Designed and conducted a State Level Workshop on "Promoting Intellectual Property Rights Awareness in Technical Education" under Technical Education Quality Improvement Programme (TEQIP)

- ✓ Conducted training programme for technical supervisors from Finchaa Sugar factory, Ethiopia on Steam Generation Utilization, Maintenance and Safety at VIT, Pune in August, 1999 in collaboration with Vasantdada Sugar Institute, Manjari, Pune.
- ✓ Developed learning modules and conducted programme for engineers from Sudanese Sugar Corporation, Sudan on Steam Generation Utilization , Maintenance and Safety at VIT, Pune in August 2000 in collaboration with Vasantdada Sugar Institute, Manjari, Pune
- ✓ Developed learning modules and conducted a module on compressor in HVAC Awareness Programme for M/s Tata Honeywell in May, 2000 and in August 2001 at their training center.
- ✓ Developed and conducted a training programme on Power Generation Processes for the engineers of M/s Tata Honeywell.
- ✓ Conducted Performance Trial on Steam Power Plant for final year students of Mechanical Engineering of various Engineering Colleges at VIT, Pune during September 1999 to September 2001.
- ✓ Contributed in organizing committee for VIT-TTTI (Technical Teacher's Training Institute) Induction Training Programme for Polytechnic Teachers at VIT Pune during 13th May 1996 to 31st May 1996.
- ✓ Contributed in organization committee of the short Term Training Programe (STTP) on "Industrial Engineering Challenges in the New Millennium" in AICTE-ISTE Summer School from 19th June to 1st July, 2000 at VIT Pune.
- ✓ Conducted Performance Trial on Steam Power Plant for final year students of Mechanical Engineering of various Engineering Colleges at VIT, Pune during September 1999 to September 2001.
- ✓ Contributed in organizing committee for VIT-TTTI (Technical Teacher's Training Institute) Induction Training Programme for Polytechnic Teachers at VIT Pune during 13th May 1996 to 31st May 1996.

- ✓ Contributed in organization committee of the short Term Training Programe (STTP) on "Industrial Engineering Challenges in the New Millennium" in AICTE-ISTE Summer School from 19th June to 1st July, 2000 at VIT Pune.

SECTION 8: TEACHING and EDUCATIONAL DEVELOPMENT

Teaching and Educational Development

- ✓ Extent, variation and level of teaching:
  - Involved in teaching Undergraduate (UG),
  - Post Graduate (Master level) for 17 years (1995 to 2012).
  - Approved PhD supervisor in the University of Pune.
  - Taught at IIT Bombay, Vishwakarma Institute of Technology Pune (VI, Pune) and Asian Institute of Technology, (AIT) Thailand.
  - Contributed to the curriculum development and developed specific courses related to thermal engineering, heat exchangers, innovation & IPR.
  - Mentored numerous Master's and Undergraduate student projects.

- ✓ Collaboration with Foreign Universities—academic framework
  - Coordinator of International Relations
    - Involvement in study and analysis of foreign University curriculum

- Establishing subject equivalence and framework for credit transfer.
- Design of internship programmes for VU, Pune students in these Universities.

- Involvement with Foreign Universities
  - Marist College, USA
  - The Pennsylvania State University (Penn State), USA
  - State University of New York at Binghamton
  - Cork Institute of Technology, Ireland
  - Groupe des Ecoles des Mines (GEM) France comprises of a group of seven Engineering Schools from France
  - OMG stands for Ontario-Maharashtra-Goa students exchange programme—Queens University, University of Western Ontario, Carlton, Toronto, Windsor, York, Guelph, Lakehead, McMaster, Ottawa, Waterloo, Ryerson.

✓ Course responsibilities

For PhD:

- Research Methodology
- Effective use of patent system in research

For Post Graduate:

- Energy Conservation
- Design of Heat Exchangers
- Advance Thermodynamics
- Intellectual Property Rights for Engineers
- Intellectual Property Rights for Technology Development (AT 79.03; AIT)

For Undergraduate:

- Applied Thermodynamics
- Thermal Engineering
- Engineering drawing
- Innovation and product development
- Introduction to Intellectual Property Rights

✓ Implementation of ISO 9001-2008

Established ISO system to systematize academic, administrative and procedural aspects for student exchange and internship programmes with the abovementioned foreign Universities. This is a first-of-its-kind initiative in an educational institute much appreciated by these Universities.

Trainer and Teacher

✓ Visiting Faculty, Asian Institute of Technology, Bangkok (Course AT79.03 "Intellectual Property Rights for Technology Development" conducted in March-April 2011)

✓ Visiting faculty to deliver lectures in IIT Bombay in the course titled "Intellectual Property Rights for Technology Management"

✓ Visiting Faculty, Institute of Intellectual Property Studies (IIPS), Mumbai

- ✓ Designed and conducted a State Level Workshop on "Promoting Intellectual Property Rights Awareness in Technical Education" under Technical Education Quality Improvement Programme (TEQIP)
- ✓ Conducted training programme for technical supervisors from Finchaa Sugar factory, Ethiopia on Steam Generation Utilization, Maintenance and Safety at VIT, Pune in August, 1999 in collaboration with Vasantdada Sugar Institute, Manjari, Pune.
- ✓ Developed learning modules and conducted programme for engineers from Sudanese Sugar Corporation, Sudan on Steam Generation Utilization , Maintenance and Safety at VIT, Pune in August 2000 in collaboration with Vasantdada Sugar Institute, Manjari, Pune
- ✓ Developed learning modules and conducted a module on compressor in HVAC Awareness Programme for M/s Tata Honeywell in May, 2000 and in August 2001 at their training center.
- ✓ Developed and conducted a training programme on Power Generation Processes for the engineers of M/s Tata Honeywell.

Projects (Selected)

- ✓ Sponsored research project for Nostrum Technology Pvt. Ltd. USA
  The project related to "Testing of Fuel Additive as Efficient Automotive Fuel Blend"
- ✓ Energy Efficient Jaggery Making Furnace
  This appropriate technology for rural application relates to a novel furnace for sugarcane juice concentration to obviate problems associated with uneven heating, hot spots and caramelisation that are encountered in traditional jaggery manufacture process.
- ✓ Rotary water heating system
  This project aims at development of appropriate technology in terms of rotary water heating system using solid fuel in particular municipal waste; obviating the use of conventional systems such traveling grate, dumping grate.
- ✓ Freeze Concentration System for Milk
  The research is directed to develop a simple, cost effective, hygienic, manually operable milk freeze concentration system to selectively separate water (in the form of ice) from milk using layer freezing process.
- ✓ Energy Conservation in Milk Powder Processing
  Water content from milk is separated in the form of ice instead of vapor using freeze concentration system in the milk powder processing unit to achieve substantial energy saving.
- ✓ Development of a sanitation system including thermophilic toilets to render pathogen free and odourless discharge for the bottom billions.