Indo-U.S. Science and Technology Forum

Catalyzing Indo-U.S. Science & Technology Cooperation

ANNUAL REPORT 2017-18

An autonomous organization jointly established by the
Department of Science & Technology
Govt of India and the U.S. Department of State

Indo-U.S. Science and Technology Forum

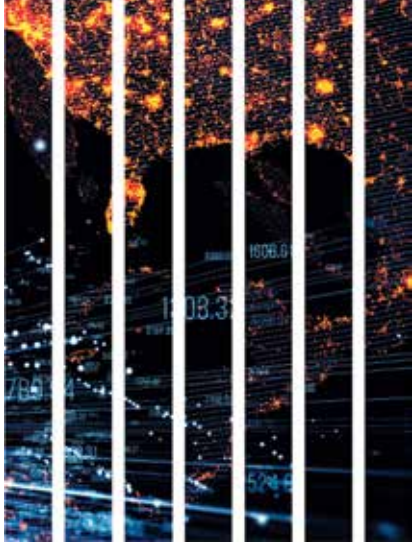
Catalyzing Indo-U.S. Science, Technology and Innovation Collaborations for over 18 years!

IUSSTF

Indo-U.S. Science & Technology Forum

ANNUAL REPORT 2017-18

The Indo-U.S. Science and Technology Forum (IUSSTF) established under an agreement between the Governments of India and the United States of America in March 2000, is an autonomous, bilateral organization jointly funded by both the Governments that promotes science, technology, engineering and biomedical research and innovation through substantive interaction among government, academia and industry. The Department of Science & Technology, Government of India and the U.S. Department of State are the respective nodal departments.



Contents

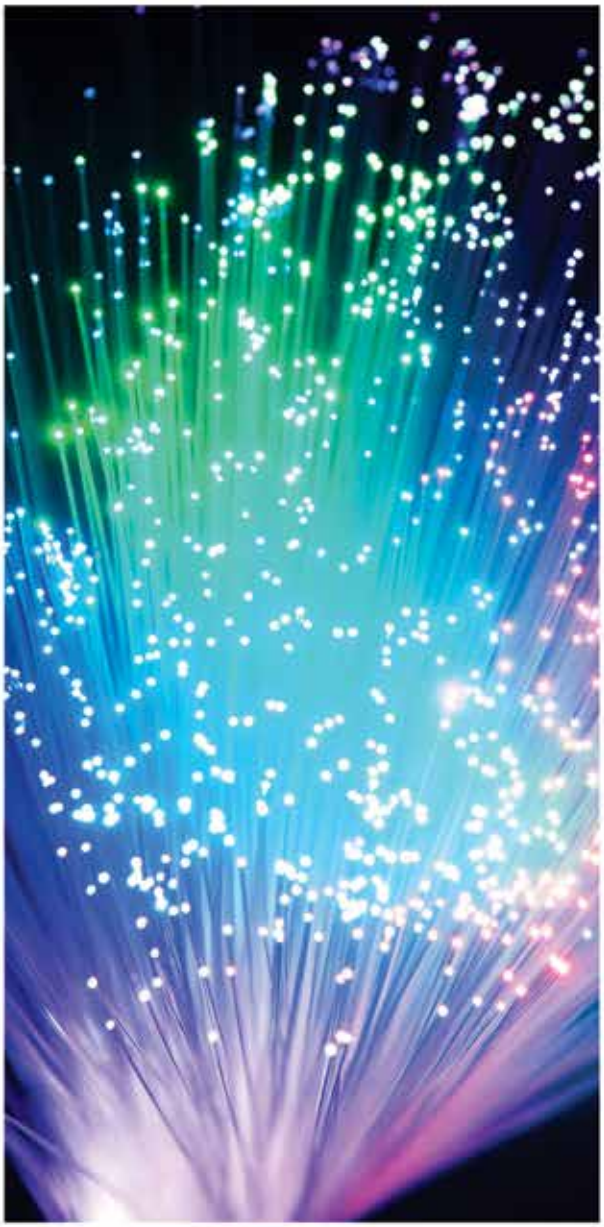
I am sure these strategic initiatives, in policies and mind set, set into motion during the year would continue to define the future course and yield rich dividends for several years down the line.

Journey into the Future

It is with a sense of great accomplishment that I present this Annual Report of bi-national Indo-US Science & Technology Forum (IUSSTF) to all our patrons and stakeholders for the Indian fiscal 2017 – 18. The year just gone by had been extremely satisfying to us not only in terms of establishing new benchmarks of excellence in operational parameters but also in terms of igniting a spark to bring about a disruptive change in thinking and the mind-set.

IUSSTF recently celebrated 18th Anniversary of its existence. The experiment which started 18 years ago as a symbolic gesture of bilateral cooperation in S&T between India and the United States has now fully blossomed into one of the most important single window platform enabling communities from both the sides to engage across the entire landscape of Science, Technology, Innovation and Entrepreneurship.

We originally started with a small portfolio of networking activities comprising of bilateral workshops/ conferences and virtual centres. While these continue to be an important dimension of our portfolio even today, we now have set up downstream mechanisms in place to nurture and carry forward those initial "Sparks" all the way through a rich and broad based portfolio of programs and schemes that cover the entire STI Landscape. While our stake holder base, interventions and number of beneficiaries have multiplied overtime, there had been a marked improvement in operational efficiencies and overall user experience. Most notably, our outreach and brand value have gone up by several orders of magnitude during last few years through innovative use of technology and strategic partnerships with other constituents of ecosystems in India and the U.S.



It had been a reasonably long journey till so far and we have surely covered more than enough ground to fulfil the expectations and aspirations of our stakeholders to justify the basic premise of our existence. The very fact that we had been able to grow by roughly 20 orders of magnitude over the last 18 years inspite of meagre bilateral funding available to us, is in itself a testimony of the value we have been able to create. Nevertheless, while we embark upon the next leg of our journey into the future, it is pertinent that we think out of the box and reinvent ourselves "to do different things" as well as "do things differently", to remain relevant and impactful more than ever.

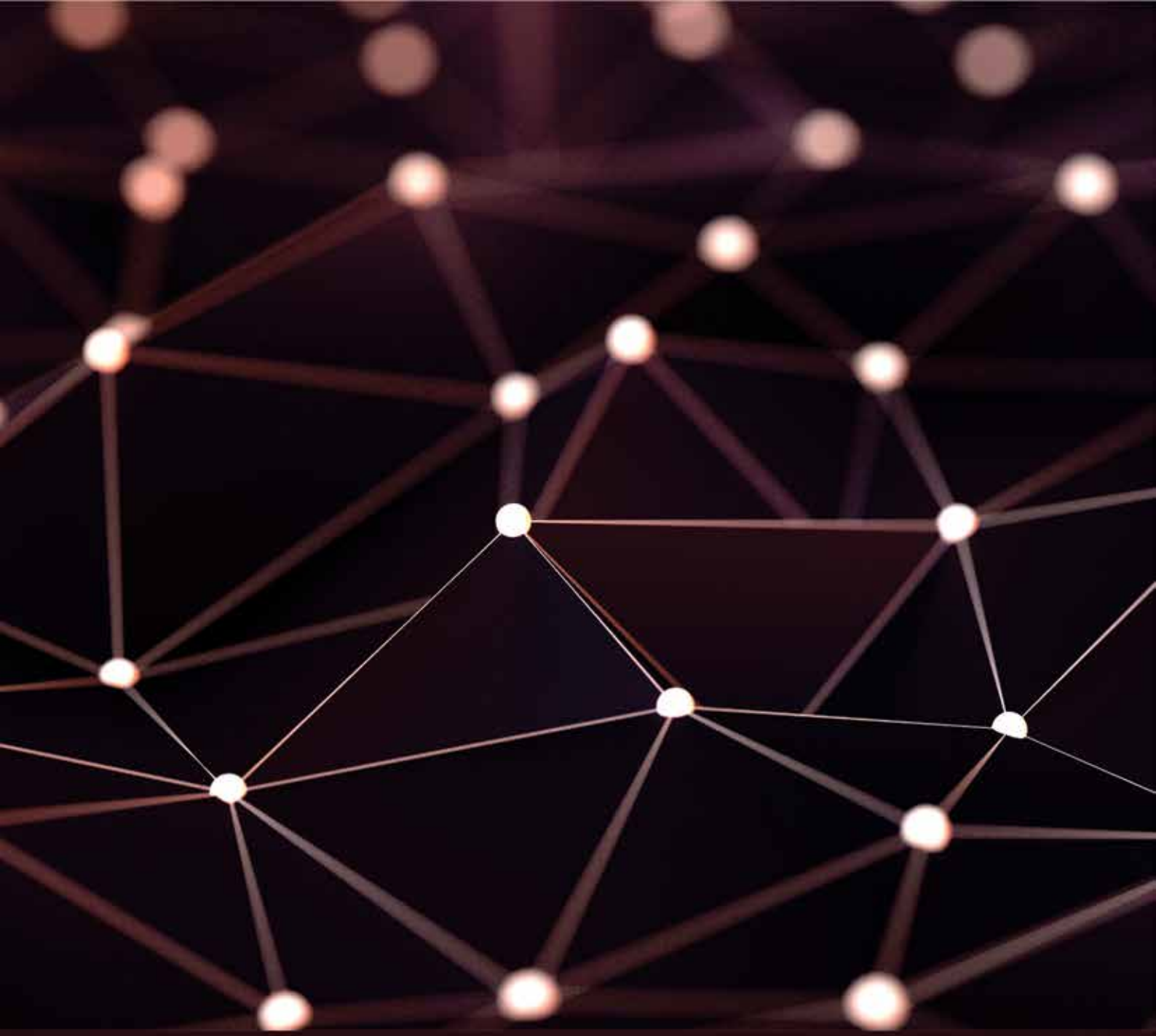
It is with this intension that we tried to envision several strategic initiatives concerning restructuring of the organisation and its governance structure, redesigning the program portfolio and redefining the guiding philosophy for individual interventions. We aim to position ourselves in a manner that we are able to create new opportunities and generatedisproportionate value that is driven by the intellectual effort and disruptive innovation rather than in direct proportion to the quantum of monetary investment, which has finite limits. Some of these structural interventions have been put in place while many others are in serious consideration of the two governments and will manifest shortly through the consensus building process.

The real strength of an organisation lies in its people and their resourcefulness, both at the level of competency as well as morale. It's the people who not only keep the organisation afloat but take it to next levels existence while successfully navigating through the dynamic challenges of the real world. In a way, profile and health of an organisation is an expression of the aspirations of its stakeholders, most importantly the employees and the emotional bond they have with the organisation.

Over the last few years, we had made a conscious effort to infuse a lavish dose of investment in our people not only to raise the level of their skills and competencies but also to instil a sense of self-belief to approach their job with pride and honour. I truly believe that the high morale and empowerment amongst our people will be the real corner stone to establish and reinforce our position as a professional "knowledge and skill" based organisation.

Using our glorious past as a launch pad, we are fully prepared to embark upon the next leg of our journey with the excitement and belief that our best is yet to come. I look forward to the continued support and guidance of all our stakeholders in our journey into the future.

Rajiv Kumar Tayal
Executive Director, IUSSTF



INTRODUCTION

IUSSTF: The Genesis

The **Indo-U.S. Science and Technology Forum (IUSSTF)** is a bi-national organization jointly created by India and the United States of America, through a formal agreement signed by the two Governments on March 21, 2000. IUSSTF acquired legal status a few months later, when it was registered as a Society under the "Societies Registration Act" in India in June 2000, with its office at New Delhi.

IUSSTF is also the secretariat for the **U.S. - India Science and Technology Endowment Fund,** which was jointly setup later by the two Governments, through a separate agreement in the year 2009.

The **Department of Science and Technology (DST)** of the Ministry of Science and Technology, Govt. of India, and the **U.S. Department of State,** are the arms of the two Governments that overview the functioning of IUSSTF through a Governing Board, having equal representation from both sides.

IUSSTF: Vision, Mission and Objectives

VISION

Excellence in Science, Technology and Innovation space through collaborative initiatives between India and the United States of America.

MISSION

- **Act as a catalyst to promote long-term scientific collaborations between India and the U.S. through partnership amongst individual scientists, scientific institutions and the scientific community at large.**
- **Establish platforms and mechanisms to connect the S&T eco-systems of both the countries to act as a fertile ground to foster individual and institutional partnerships in a natural and sustainable manner.**

OBJECTIVES

- **Create awareness through exchange dissemination of Information and Opportunities in S&T cooperation.**
- **Capitalize and build on the scientific and technological synergy leading to long term partnership on shared values.**
- **Support exciting program portfolio that leads to sustainable interactions and strengthens strategic partnerships.**
- **Nurture contacts between young and mid-career scientists to develop mutual trust, foster excellence and explore new frontiers.**
- **Encourage public-private partnership to foster elements of Innovation, Application and Enterprise.**

IUSSTF Program Portfolio

(Classified by Verticals)

I. Scientific Networks

- Bilateral Workshops/Training Programs/Symposia
- Indo-U.S. Virtual Networked Centres

II. Innovation and Entrepreneurship

- U.S.-India Science and Technology Endowment Fund (USISTEF)
- India Innovation Growth Program (IIGP)
- Women Entrepreneur Quest (WEQ)

III. Research and Development

- Indo-U.S. Joint Clean Energy Research and Development Centre (JCERDC)
- Affordable Blood Pressure Measurement Technologies for Low Resource Settings in the U.S. and India
- Partnerships for International Research and Education (PIRE)
- PACEsetter Fund
- Real Time River Water and Air Quality Monitoring (WAQM)

IV. Visitations and Fellowships

- Bhaskara Advanced Solar Energy (BASE) Fellowships
- Bioenergy-Awards for Cutting Edge Research (B-ACER)
- Building Energy Efficiency Higher & Advanced Network (BHAVAN) Fellowships
- SERB–Indo-U.S. Postdoctoral Fellowships for Indian Researchers
- Water Advanced Research and Innovation (WARI) Fellowships
- Genome Engineering/Editing Technology Initiative (GETin)
- ASM-IUSSTF Indo-U.S. Professorship in Microbiology
- IUSSTF–American Physical Society Fellowships
- Indo-U.S. Fellowship for Women in STEMM (WISTEMM)
- Research Internships in Science and Engineering
- Graduate Research Opportunities Worldwide (GROW)
- S.N. Bose Scholars Program
- Khorana Program for Scholars
- IUSSTF-Viterbi Program
- Initiative for Research & Innovation in Science (IRIS)

IUSSTF Program Portfolio

(Classified by Nature of Support)

I. IUSSTF Core

- Bilateral Workshops/Training Programs/Symposia
- Indo-U.S. Virtual Networked Centres
- IUSSTF-Viterbi Program
- IUSSTF- APS Fellowships
- ASM-IUSSTFProfessorship
- Research Internships in Science and Engineering (RISE)
- S.N. Bose Scholars Program (U.S. component)

II. U.S.-India Science and Technology Endowment Fund (USISTEF)

III. Extra Mural Programs- EMPs
(Supported by External Agencies/ Industry)

- Indo U.S. Joint Clean Energy Research and Development Centre
- Affordable Blood Pressure Measurement Technologies for Low Resource Settings in the U.S. and India
- Partnership for International Research and Education
- PACEsetter Fund
- Real Time River Water and Air Quality Monitoring
- SERB–Indo-U.S. Postdoctoral Fellowships for Indian Researchers
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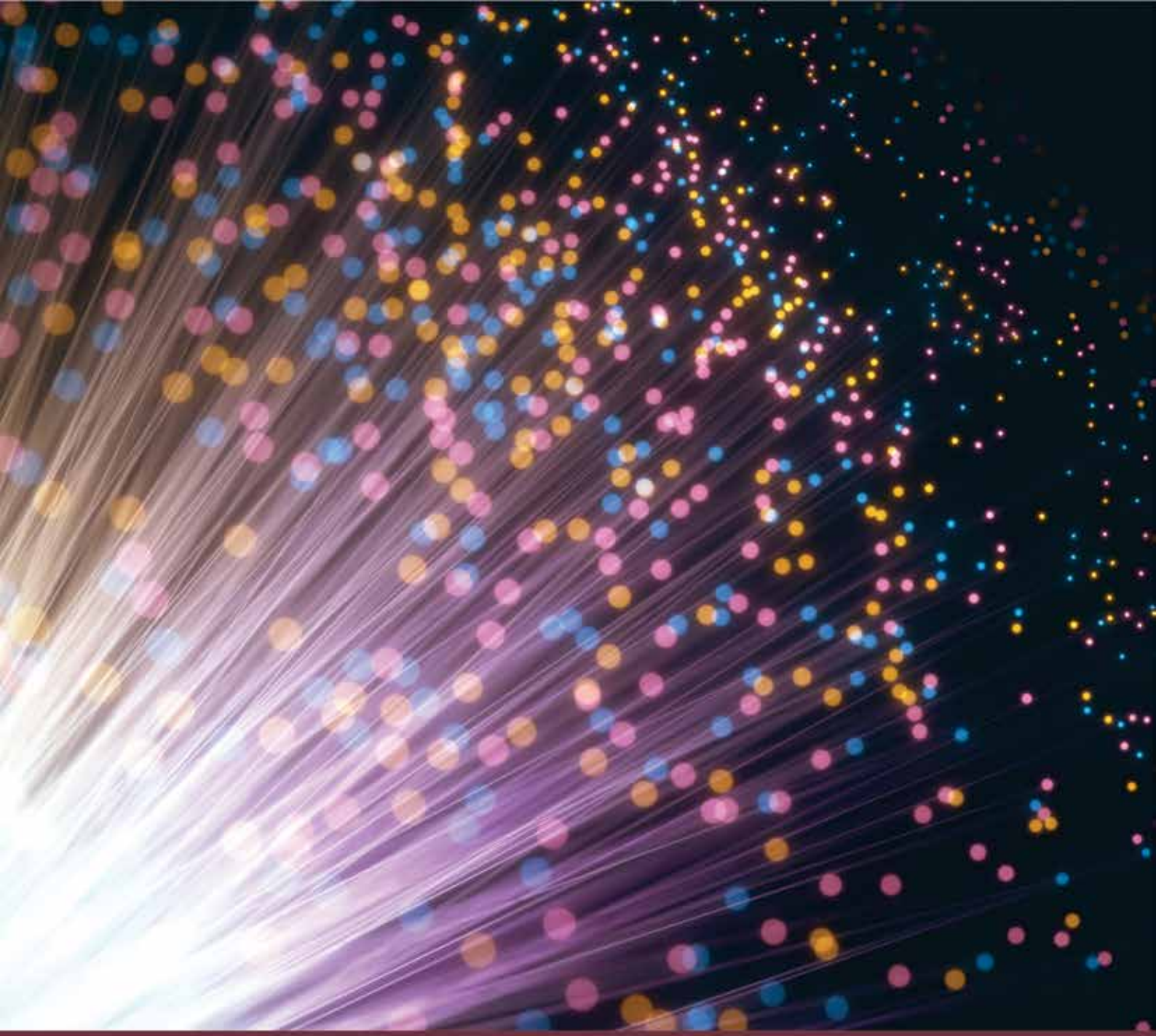
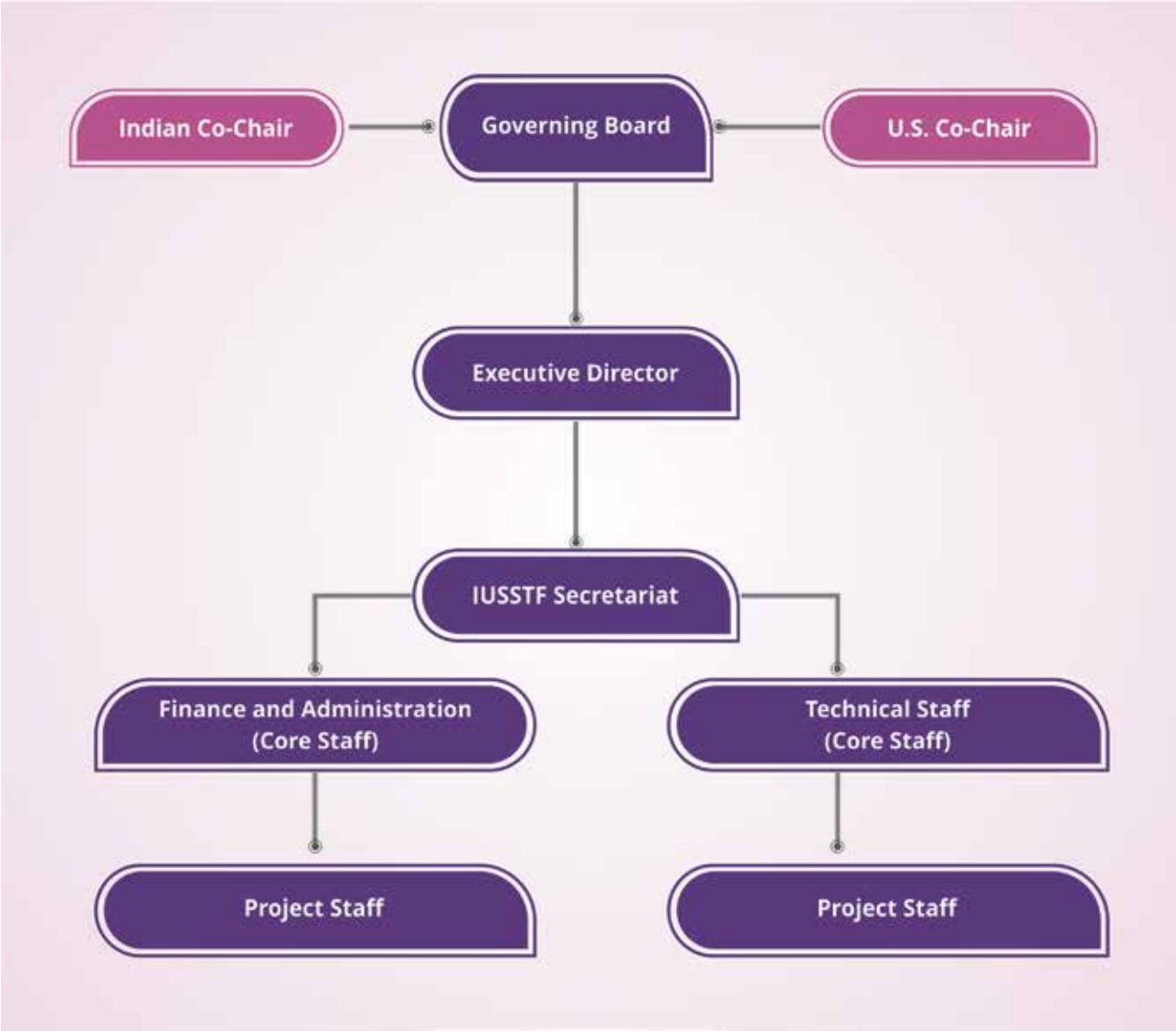
- Genome Engineering/Editing Technology Initiative
- Indo-U.S. Fellowship for Women in STEMM
- Water Advanced Research and Innovation Fellowship
- Graduate Research Opportunities Worldwide
- Khorana Program for Scholars
- S.N. Bose Scholars Program
- Initiative for Research & Innovation in Science



GOVERNANCE STRUCTURE

IUSSTF Organizational Chart



Administrative Mechanism

- Autonomous
- Bilateral
- Non-Governmental
- Not for Profit Society

Funding Source

- Annual Interest from U.S. Endowment Fund with matching contribution from DST, Govt. of India
- Freedom to Secure Private and Other Funding

IUSSTF Governing Board

Ashutosh Sharma
Co-Chair
Department of Science & Technology

Renu Swarup
Dept. of Biotechnology

J.B. Mohapatra
Dept. of Science & Technology

Indranil Manna
Indian Institute of Technology - Kanpur

Ambuj D Sagar
Indian Institute of Technology - Delhi

Hari S. Bharatia
Jubliant Bhartia Group

Gopal Iyengar
Ministry of Earth Sciences

Jonathan Margolis
Co-Chair
U.S. Department of State

Elizabeth Urbanas
U.S. Dept. of Energy

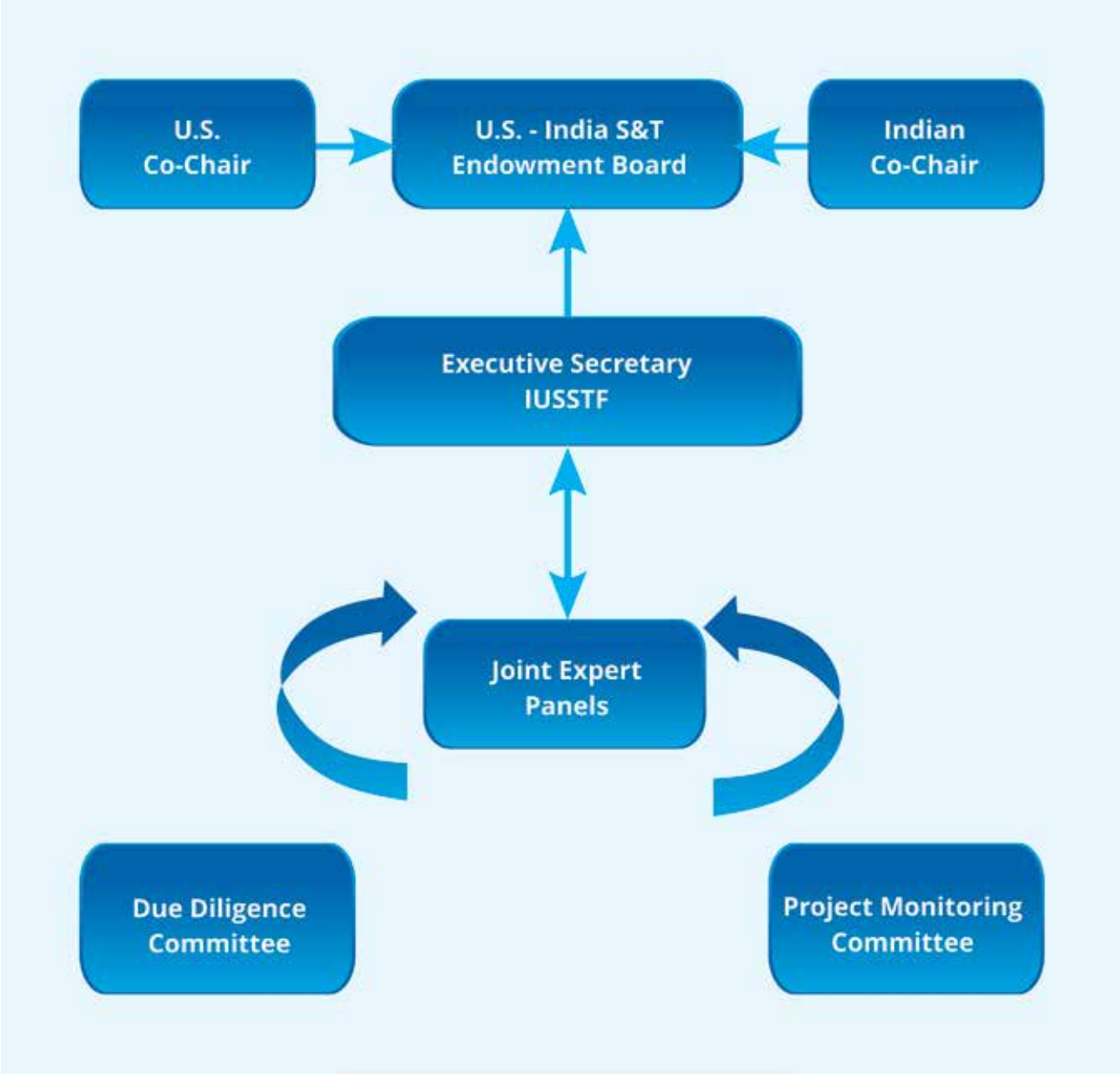
Mark Coles
National Science Foundation

F. Gray Handley
National Institutes of Health

Leo M. Chalupa
George Washington University

Kumud Srinivasan
Intel® Corporation

Functional Structure for U.S. - India S&T Endowment Fund (USISTEF)



USISTEF Board

Arabinda Mitra
Co-Chair
Dept. of Science & Technology

H.K. Mittal
Dept. of Science & Technology

Alka Sharma
Dept. of Biotechnology

B. V. Phani
SIIC, Indian Institute of Technology Kanpur

Vipin Kumar
National Innovation Foundation

Anand Kamavisdar
Ministry of External Affairs

Ananta P. AnantaramSarma
Former-SIDBI Venture Capital

Shirshendu Mukherjee
Biotechnology Industry, Research Assistance Council

Sanjay Vijay Kumar
Kochi Start-up Village

J. Robert Garverick
Co-Chair
U.S. Embassy, New Delhi

Steven Ferguson
National Institutes of Health

Philip Singerman
National Institute of Standards & Technology

Mojdeh Bahar
U.S. Dept. of Agriculture

Lisa Brodey
U.S. Dept. of State

Sashi Reddi
SRI Capital

Peter T. Dabrowski
Tano Capital/Tano Ventures

People behind IUSSTF

Rajiv Kumar Tayal
Executive Director

Core Staff

R. Varadarajan
Controller

Nishritha Bopana
Principal Science Officer

Chaitali Bhattacharya
Principal Science Officer

Nikhil Jain
Associate Accounts Officer

Monika Madan
Senior Personal Secretary

Manoj Prasad
Assistant Admin Officer

Program Staff

Babulal Chaudhary
Program Officer

Pushpa Iyer
Program Officer

Aasita Apoorva
Associate Program Officer

Priya Thomas
Associate Program Officer

Radhika Tandon
Associate Program Officer

Subhashree Basu
Associate Program Officer

Akanksha Kaushik
Associate Program Officer

Sravan Kumar Paleti
Assistant Program Officer

Anita Vishwakarma
Senior Accounts Associate

Rakesh Kumar Singh
Account Associate

Rakesh Bhandari
Admin Associate

YEAR AT A GLANCE

Highlights of the Year

Snapshot I
(Operational Indicators)

S.No.	Item	Numbers
1	**Bilateral Workshops**	
	• Awarded in 2017-18	18
	• Held in 2017-18	16
2	**Virtual Networked Centers**	
	• Awarded	13
	• Ongoing	23
3	**USISTEF**	
	• 8th Call Registrations	1665
	• Submitted Applications	434
	• Awards	5
4.	**Real Time Water and Air Quality Monitoring Program**	
	• Submitted Applications	59
	• Awards	4
5.	**PACEsetter Fund**	
	• Submissions Received in Second Call	168
6.	**JCERDC- Smart Grid and Energy Storage**	
	• Submitted Applications	6
	• Award	1

Others

- Unprecedented response to the 8th call of the USISTEF Program.
- Use of innovative ways to extend the outreach of 8th USISTEF Call to more than 25,000 nodes in India and the United States.
- Reduced turnaround time in the last Call for Bilateral Workshops by 51% i.e. by 3 months.

Highlights of the Year

Snapshot II
(Strategic Initiatives)

- **New Visitation Programs**
  - Genome Engineering/Editing Technology Initiative Program
  - Indo-U.S. Fellowship for Women in STEMM
- **Strategic Partnerships**
  - Ben Franklin Technology Partners, Philadelphia
- **Virtual Platforms and Networks**
  - Premiere of a short Film on IUSSTF and its 18- year journey
  - Launch of revamped IUSSTF website
  - Conceptualization of an IUSSTF Alumni Network
  - Gateway for Donations to IUSSTF on the IUSSTF website *(qualifying for exemptions under Section 80G of the Income Tax Act in India* and *Section 501(c)(3) of the Internal Revenue Code in the United States.)*
- **USISTEF**
  - Instructional Video guiding potential candidates through the Application Process
- **Print Portfolio**
  - Compendium covering IUSSTF Funded Bilateral Workshops from 2014-2017
  - Compendium capturing accomplishments of Indo-U.S. Virtual Network Centers supported by IUSSTF in the period 2014-2017
- **IUSSTF HR**
  - Re-designation and New Compensation Structure for IUSSTF Staff

SECTION 1

SCIENTIFIC NETWORKS

Scientific Networks

IUSSTF funded collaborations provide a platform for young and early-career scientists to interact and network with their senior and well-established counterparts, who could potentially become both lifelong mentors and collaborators. Building scientific networks not only helps share expertise thereby doubling the value of the effort; but also in some cases leads to the generation of completely novel leads and ideas.

IUSSTF promotes such networks to foster long-term collaborations between the scientific communities of India and the United States through two separate yet complimentary schemes. While **Bilateral Workshops** are expected to act as an instant connect and point of formal initiation; **Virtual Networked Centers** provide a formal mechanism to support specific collaborations for an extended period of time.

There are 'two' Calls for proposals for Bilateral Workshops and 'one' for Virtual Networked Centers, each year. The table below provides a summary of Bilateral Workshops and Virtual Networked Centers supported over the past three years:

	Numbers			
	2015-16	**2016-17**	**2017-18**	**Cumulative (2001-2018)**
Bilateral Workshops/ Training Schools	15	17	18	362
Virtual Networked Centers	5	8	13	80

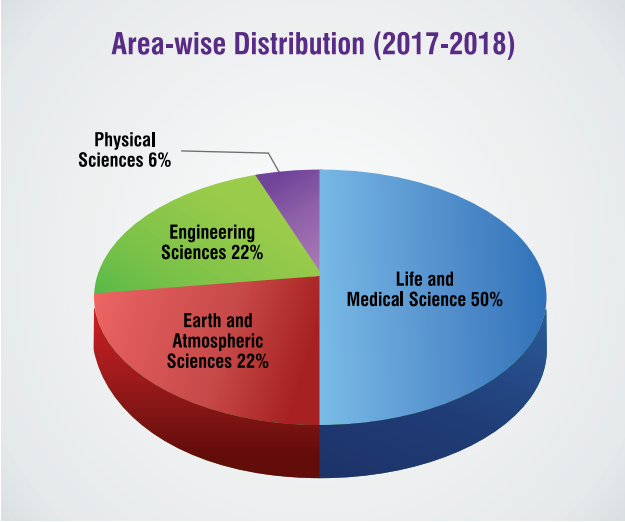
Bilateral Workshops/Training Programs

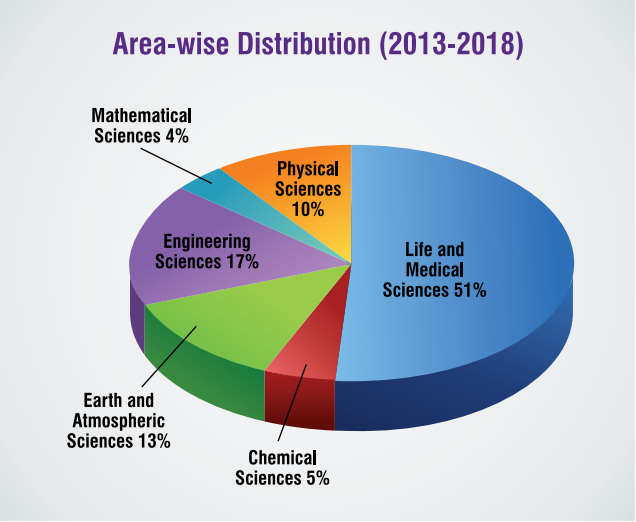
Bilateral Workshops are targeted to promote interactions between Indian and American scientists and engineers from academia, laboratories and industry with the explicit aim to develop sustained linkages. Proposals are peer-reviewed both in India and the United States. The review parameters include novelty of topic, mutual benefits to India and the U.S., background of workshop coordinators and participants, potential for developing new and sustained bilateral linkages, extent of student participation, etc.

Eighteen Bilateral Workshops were selected for support during the year 2017-18 (List provided as *Annexure I)*. The list of Workshops that were awarded earlier but were held during the year 2017-18 are placed at *Annexure II.* The data pertaining to the last three years is presented below.

		2015-16	2016-17	2017-18
No. of Applications Received		35	44	47
No. of Awards		15	17	18
Funding	(INR/ Million)	18.94	19.4	20.9
	(USD/ Million)*	0.29	0.30	0.32

**1USD= 65 INR ; The exchange rate is as per values on 31st March 2018.*





Virtual Networked Centres

The aim of **Virtual Networked Centers** is to enable Indian and American scientists to carry out joint research activities by leveraging already existing infrastructure and funding available with the partners on both sides through a linkage established by a virtual mechanism that provides for seamless connectivity and exchange of faculty/ scientists and students from both sides. These centers are supported under two categories:

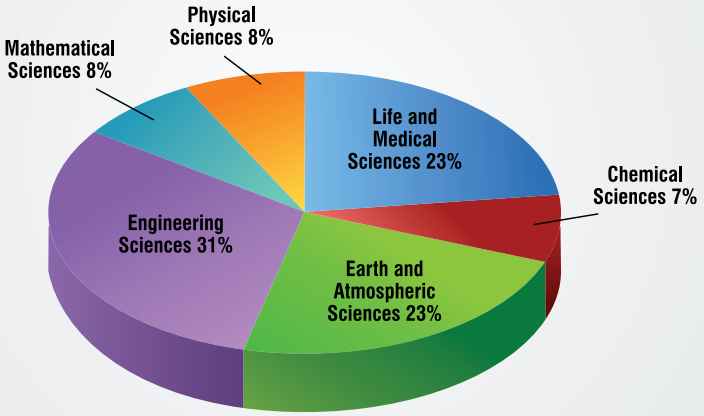
- ***Knowledge R & D Networked Centres***
  - o Partners: R&D labs and academia partnership (2+2)
  - o Provide opportunities for integrating research and education
- ***Public-Private Networked Centers***
  - o Partners: Academia/ R&D lab - Industry partnership (2+2)
  - o Promote pre-commercial R & D with application potential

Thus far, 80 Virtual Centres have been supported. Thirteen Joint Centers were awarded during the year 2017-18, (list provided as *Annexure III)*.The data for the last three years is presented below:

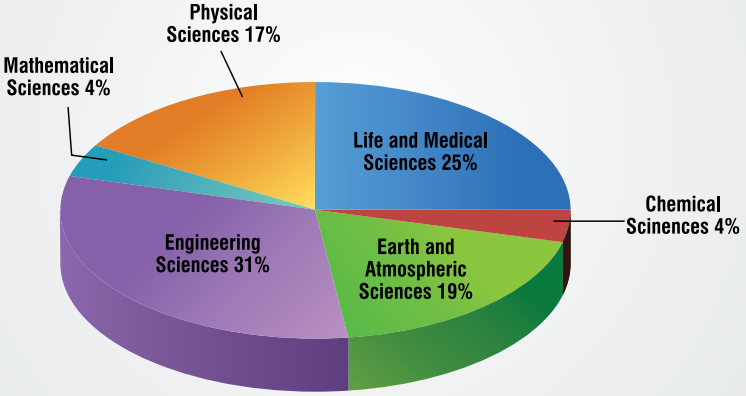
		2015-16	2016-17	2017-18
No. of Applications Received		28	33	56
No. of Awards		5	8	13
Funding	(INR/ Million)	16.56	29.84	48.72
	(USD/ Million)*	0.26	0.46	0.75

**1USD= 65 INR ; The exchange rate is as per values on 31st March 2018.*

Area-wise Distribution (2017-2018)



Area-wise Distribution (2013-2018)



Virtual Centers-Institutional Engagement (2017-18)

India	USA
• All India Institute of Medical Sciences, New Delhi • Amity University, Noida • Banaras Hindu University, Varanasi • Central Electrochemical Research Institute, Karaikudi • Indian Institute of Astrophysics, Bangalore • Indian Institute of Science Bangalore • Indian Institute of Science Education and Research, Kolkata • Indian Institute of Science Education and Research, Pune • Indian Institute of Science Education & Research, Thiruvananthapuram • Indian Institute of Science Education and Research, Tirupati • Indian Institute of Technology Bombay • Indian Institute of Technology, Delhi • Indian Institute of Technology, Dhanbad • Indian Institute of Technology, Kanpur • Indian Institute of Technology, Kharagpur • Indian Institute of Technology Madras • Indian Institute of Technology Ropar • Inter-University Centre for Astronomy and Astrophysics, Pune • Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore • National Centre for Cell Science, Pune • National Chemical Laboratory, Pune • Raman Research Institute, Bangalore • Shiv Nadar University, Gautam Budh Nagar • St. Thomas College, Kozhencheri • University of Delhi, Delhi	• Arizona State University, Arizona • Baylor Scott & White Research Institute, Dallas • Brookhaven National Laboratory • California Institute of Technology, Pasadena • Carnegie Mellon University, Pittsburgh • Case Western Reserve University, Cleveland • Columbia University, New York • Duke University, Durham • Harvard University, Cambridge • Institute for Systems Biology, Seattle • Massachusetts Institute of Technology, Cambridge • Northeastern University, Boston • Northwestern University, Chicago • Rice University, Houston • Southern Illinois University, Carbondale • State University of New York at Oswego, New York • Temple University Philadelphia • Texas Tech University, Texas • The Pennsylvania State University, Pennsylvania • The University of Texas at Austin, Austin • University of Illinois at Chicago, Chicago • University of Illinois at Urbana-Champaign, Illinois • University in Cambridge, Massachusetts • University of Iowa, Iowa City • University of Michigan, Ann Arbor • University of North Texas, Denton • University of Oregon, Eugene, Oregon • Yale University, New Haven

SECTION 2

INNOVATION AND ENTREPRENEURSHIP

Innovation and Entrepreneurship

Innovation supported by a vibrant entrepreneurial ecosystem will be the key to success in this era of rapid technological evolution.

IUSSTF supports a rich portfolio of programs to promote innovation and entrepreneurship. These initiatives are S&T driven and have the capability and potential to benefit not only our two countries, but the world at large.

IUSSTF provides grant-in-aid funding support to startups under the **United States India Science and Technology Endowment Fund (USISTEF),** which is our flagship program in the space of innovation and enterprise. This program enables bilateral teams from India and United States to translate S&T driven innovations into distinct market opportunities.

IUSSTF also implements the **India Innovation Growth Program (IIGP)** and **Women Entrepreneurship Quest (WEQ)** in partnership with other Agencies and Ecosystem Partners. Both IIGP and WEQ are empowering mechanisms to recognise and reward outstanding innovations and innovators.

United States–India Science & Technology Endowment Fund (USISTEF)

The governments of the United States of America (through the Department of State) and India (through the Department of Science & Technology) established the **U.S. India Science and Technology Endowment Fund (USISTEF)** for the promotion of joint activities that would lead to innovation and entrepreneurship through the application of science and technology.

Through a highly competetive process, USISTEF selects and supports financially promising Joint U.S.-India Entrepreneurial initiatives on co-developing products or technologies that are beyond the ideation stage, high on societal impact and have significant potential to commercialize within 2-3 years. The projects are organized into two broad categories, namely *"Empowering Citizens (EC)"* and *"Healthy Individuals (HI)".*

During the last eight years, "thirty two" projects have been awarded through 8 Calls. The list of awards approved during the year 2017-18 is presented in *Annexure IV;* while the complete list of all the awards made through the first seven Calls can be viewed at *Annexure V.*

Highlights of the Year

- **Application Format for the USISTEF program was revised** w.e.f. the 8th Call, the core-content while retaining and doing away with repetitions and overlap to making it both simple and cohesive. The Executive Summary and Detailed Business Plan stages were combined to ensure that comprehensive data-driven information is available to reviewers to arrive at an informed decision. Accordingly, the online portal for the submission of proposals was also revised to accommodate the new features.
- **Eighth Call:** As a part of the outreach for the eighth call, the Secretariat reached out to potential applicants through a multi-pronged strategy that included newspaper advertisements, use of social media platforms, leveraging IUSSTF's extensive partner networks, and, in-person interactions with the Entrepreneurial community in both India and the United States. Consequently, IUSSTF was able to reach out to more than 25,000 nodes in India and the United States. As a result of this extensive outreach, IUSSTF received **452 applications** in response to the 8th Call – 233 in the Healthy Individuals (HI) category and 216 in the Empowering Citizens (EC) category. After multiple rounds of evaluation, the USISTEF Board finally recommended five projects for support. Details of Awarded projects has been placed at Annexure IV.
- **Ninth Call:** In order to guide potential candidates through the application process, a short Instructional Video was created and shared on the IUSSTF and USISTEF websites. The video is also available on YouTube at https://www.youtube.com/watch?v=8-Nl7PPc7Oc.
- **Products Launched:** The following products supported by USISTEF grants were commercially launched during the past year:
    - **Remotion Knee:** A high-performance, low-cost prosthetic knee joint for above-knee amputees that address problems seen with prosthetic clinics such as successful fitting, follow-up and reporting of amputees.

- **QuickSee or eSee™:** An inexpensive, handheld device that helps eye-care professionals to quickly carry out refractometry and prescribe eyeglasses.
- **BioEnsure™:** To mitigate the impact of abiotic stress on agricultural productivity, project partners have developed a novel seed treatment called BioEnsureTM which contains a mixture of beneficial fungal endophytes designed to enhance the tolerance of crop plants to abiotic stresses.
- **ModRoof:** An innovative, low-cost, modular roofing tile for slum-housing based on compresesd recycled cardboard.

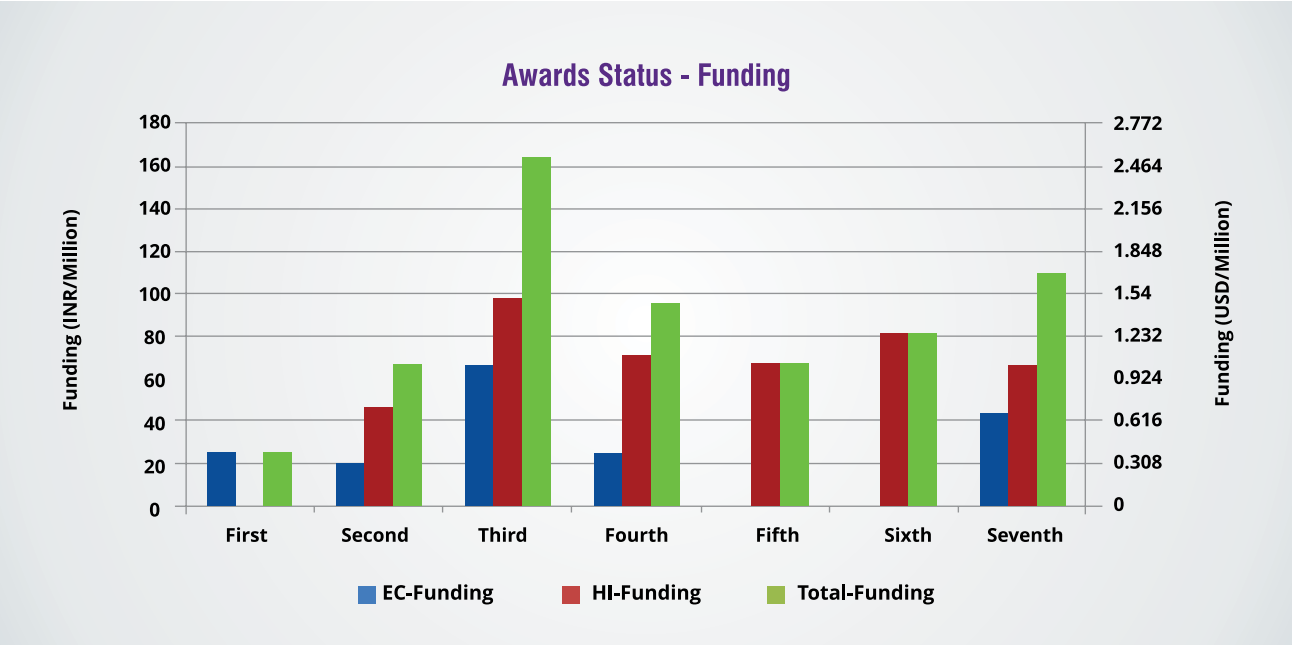
- The President of India Secretariat in association with National Innovation Foundation-India and Department of Science & Technology organized the **Festival of Innovation and Entrepreneurship (FINE)** exhibition during March 19-23, 2018 at Rashtra pati Bhavan New Delhi. The following USISTEF awardees were invited to participate in the exhibition:
  - o *"Continent Ostomy Management Device"*

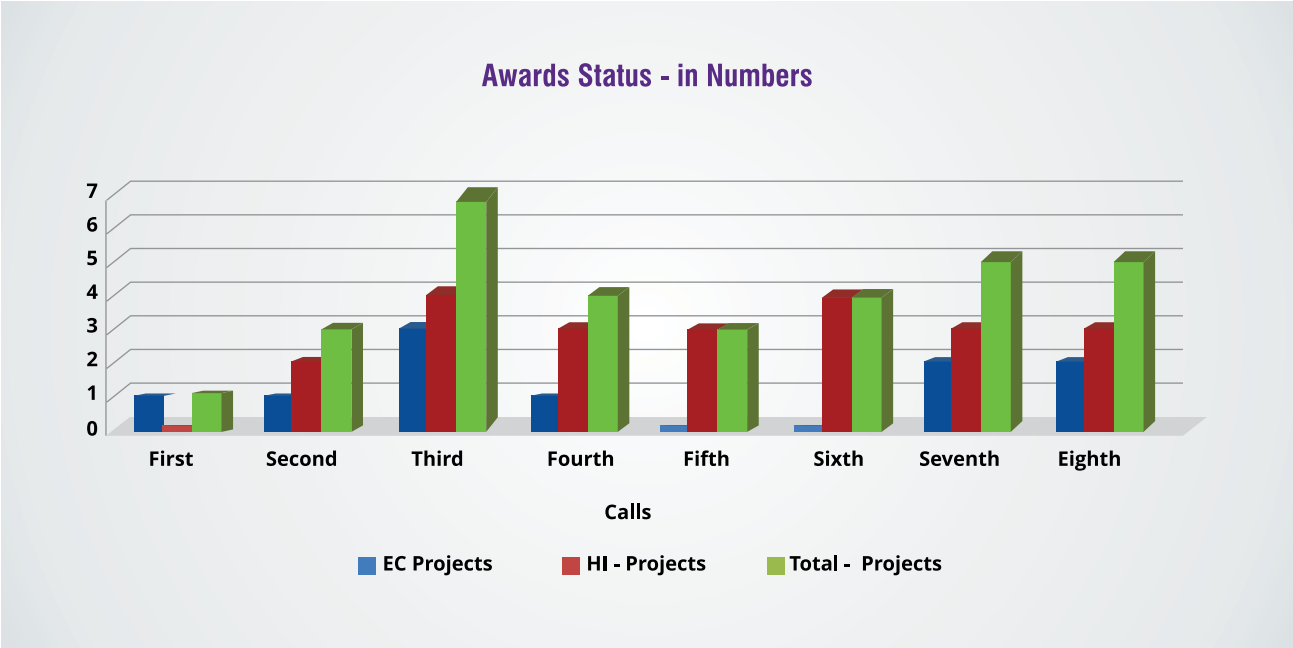
    PIs: *Pranav Chopra,* Crimson Healthcare Pvt. Ltd., New Delhi *and Peter Their,* Ximedica, Providence.
  - o *"Digital braille accessibility for the blind made affordable by magnetic actuator technology".*

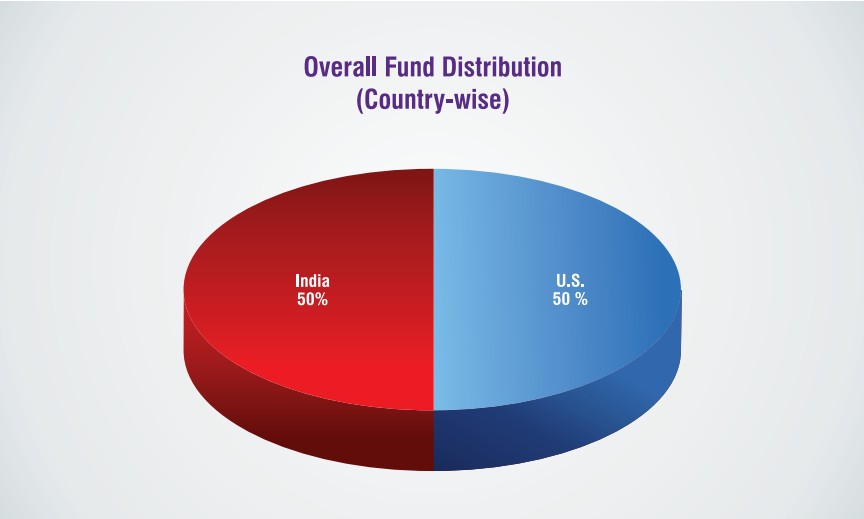
    PIs: *Surabhi Srivastava,* Inceptor Technologies Pvt. Ltd. (Innovision), IIT Bombay, Mumbai and *Shraddha Sangelkar,* The Pennsylvania State University, Erie.

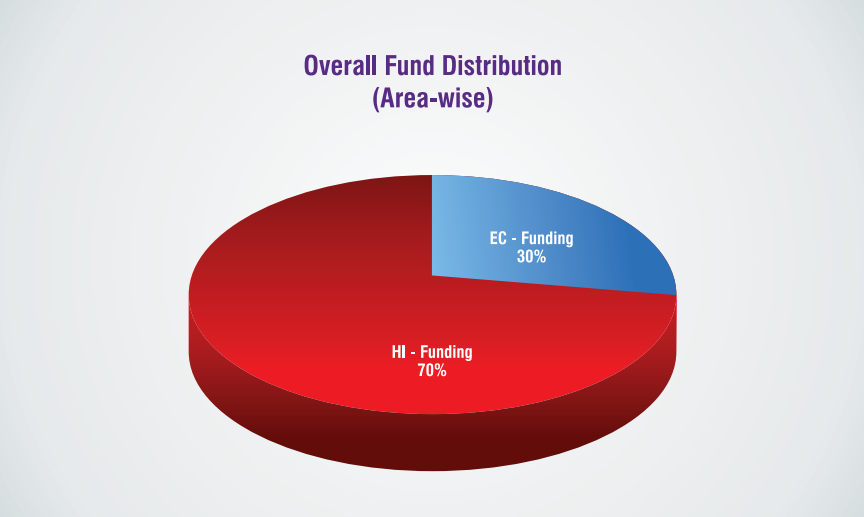
Overall Status Across all Eight Calls									
Calls	**EC**			**HI**			**Total**		
	Projects	**Funding**		**Projects**	**Funding**		**Projects**	**Funding**	
		(INR/ Million)	**(USD/ Million)***		**(INR/ Million)**	**(USD/ Million)***		**(INR/ Million)**	**(USD/ Million)***
First	1	24.92	0.38	0	0	0	1	24.92	0.38
Second	1	20.32	0.31	2	46.51	0.72	3	66.83	1.03
Third	3	66.34	1.02	4	97.72	1.51	7	164.06	2.53
Fourth	1	24.8	0.38	3	70.96	1.09	4	95.76	1.47
Fifth	0	0	0	3	67.31	1.04	3	67.31	1.04
Sixth	0	0	0	4	81.28	1.25	4	81.28	1.25
Seventh	2	43.3	0.66	3	66.23	1.02	5	109.53	1.68
Eighth	2	32.7	0.49	3	67.90	1.03	5	100.60	1.52
Total	**10**	**212.38**	3.24	**22**	**497.91**	**7.66**	**32**	**710.29**	**10.9**

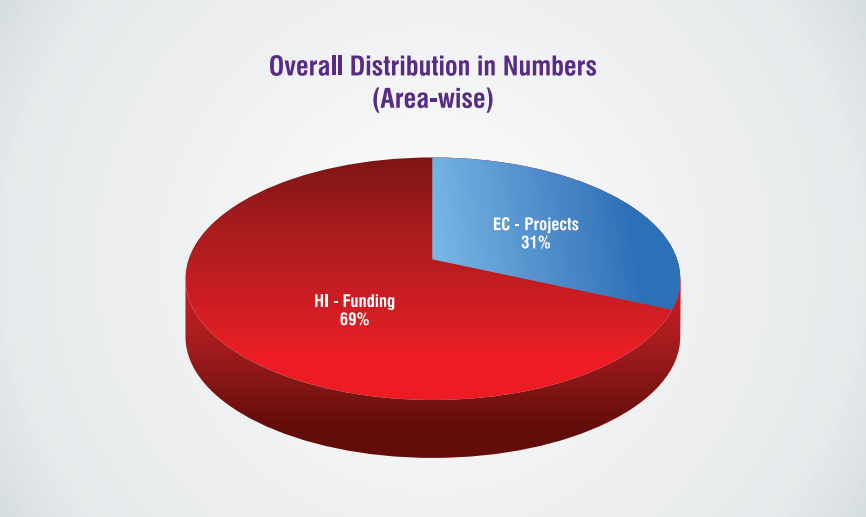
**1USD= 65 INR ; The exchange rate is as per values on 31st March 2018.*


Awards Status - Funding
Funding (INR/Million)
180
160
140
120
100
80
60
40
20
0
2.772
2.464
2.156
1.848
1.54
1.232
0.924
0.616
0.308
0
Funding (USD/Million)
First
Second
Third
Fourth
Fifth
Sixth
Seventh
EC-Funding
HI-Funding
Total-Funding


Awards Status - in Numbers
7
6
5
4
3
2
1
0
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eighth
Calls
EC Projects
HI - Projects
Total - Projects







EC- Empowering Citizens
HI- Healthy Individuals

Women Entrepreneur Quest (WEQ)

IUSSTF partnered with the National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology (DST), Government of India and the Anita Borg Institute (ABI), U.S.A. to enhance the ecosystem for women entrepreneurs in India through the **Women Entrepreneurs Quest (WEQ)** that is a unique business plan competition for women entrepreneurs in technology. The program is designed to reach out and identify talented women in the founding or leadership role of early-stage startups, who have applied technology in innovative ways to solve meaningful business problems and/or address societal issues.

Highlights of the Year:

WEQ 2017 attracted 257 applications from across India. Of the 25 women Entrepreneur short-listed, 10 were selected for the Silicon Valley Experiential Visit. (List of awardees at *Annexure VI*).

DST-Lockheed Martin India Innovation Growth Program (IIGP) 2.0

The **India Innovation Growth Programme 2.0 (IIGP)** was launched on March 10th, 2017 at the Festival of Innovations held at Rashtrapati Bhavan, New Delhi. IIGP 2.0 is an improved version of the Program leveraging learnings from the past decade. New components such as grants and incubation support have been added. TATA Trusts joined the newly revamped IIGP 2.0 along with founding stakeholders the Department of Science and Technology (DST) and Lockheed Martin Corporation, with a focus on innovations addressing socio-economic challenges. Partners have committed a funding support of US $ 2 Million for the program.

The Indo-U.S. Science and Technology Forumand Federation of Indian Chambers of Commerce and Industry (FICCI) are the key implementation partners for IIGP 2.0.

Highlights of the Year:

- This year onwards, the program solicited applications under two different tracks namely, the "University Challenge" for students, and, the "Open Innovation Challenge" for the technology community at large.
- For the top 50 Open Innovation Challenge teams, a one-week boot camp was organized at the Indian Institute of Management, Ahmedabad during 25th– 30th June, 2017.
- The University Challenge Competition was organized at IIT-Bombay on 24th June, 2017 for both the industrial and social tracks. A total of 30 University teams presented at the University Challenge (15- Social and 15-Industrial).
- The Open Innovation Competition was held during 25th-26th July where 47 start-ups pitched to an eminent Jury panel.
- Subsequently, nine University Teams and ten Open Innovation Teams were awarded at a Ceremony organized on July 26th, 2017 at New Delhi. Each University team was awarded a cash prize of Rs. 10 Lakh and each Open Innovation team was awarded Rs. 25 lakhs as Grant-in-aid Support .

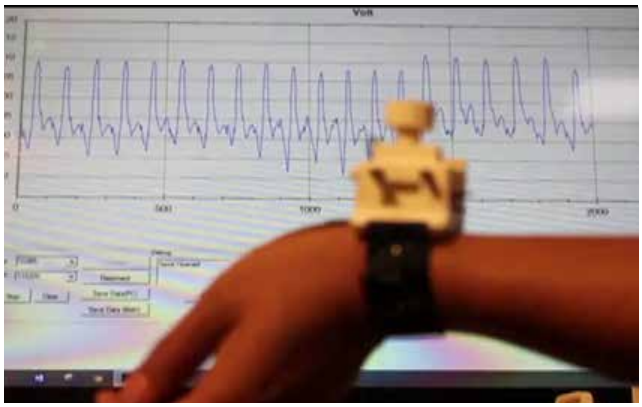
o The top 10 awardees of the Open Innovation Challenge were taken to the U.S. from September 6-15, 2017 to participate in a global exposure visit especially designed for Indian entrepreneurs.

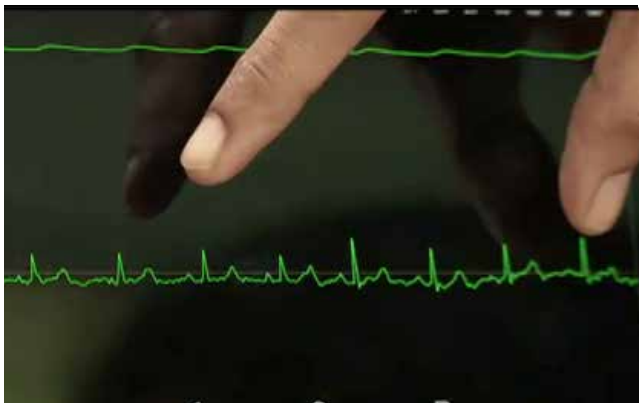
SECTION 3

RESEARCH AND DEVELOPMENT

Research and Development

IUSSTF supports a fairly broad portfolio of R&D programs in key strategic areas that are of mutual interest to both countries. The current portfolio includes flagship programs like the **Joint Clean Energy Research and Development Centre (JCERDC)** which includes the second phase of PACE-R on Smart Grid and Grid Storage; in addition to various other programs such as **Affordable Blood Pressure Measurement Technologies, Partnership for International Research and Education, PACEsetter Fund** and **Real Time River Water and Air Quality Monitoring.**





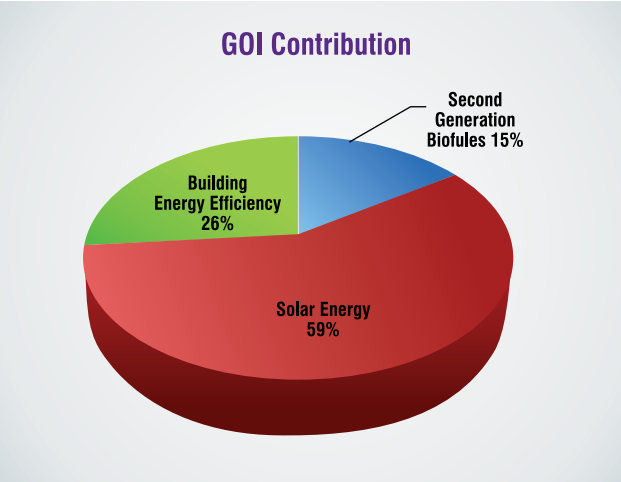
Joint Clean Energy Research and Development Center (JCERDC)

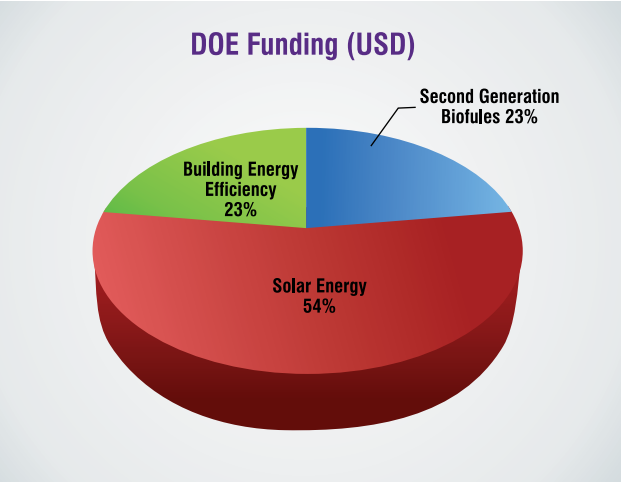
The **Indo-U.S.Joint Clean Energy R&D Centre (JCERDC)** is a joint initiative of the Ministry of Science and Technology, Govt. of India and the U.S. Department of Energy. The program began in the year 2012 with IUSSTF as the implmenting agency. The aim of the program is to facilitate joint research and development on clean energy technologies that may be deployed rapidly with the greatest impact. The JCERDC is based on a public-private partnership model of funding and is a first-of-its-kind initiative that has brought together more than 100 Indian and U.S. academic and industrial partners to work jointly in the space of clean energy research.

JCERDC Phase I

Accomplishments at a Glance:

Solar Energy	Energy Efficiency of Buildings	Second Generation Biofuels
Solar Energy Research Institute for India and the United States (SERIIUS)	***United States-India Joint Centre for Building Energy Research and Development (CBERD)***	***U.S.-India Consortium for Development of Sustainable Advanced Lignocellulosic Biofuel Systems (SALBS)***
266 Journal Publications	**21** Journal Publications	**79** Journal Publications
396 Conference Proceedings	**57** Conference Proceedings	**108** Conference Proceedings
9 Patents	**3** Patents	**6** Patents
14 Joint Workshops held	**12** PhDs and Post Docs Trained	**7** PhDs and Post Docs Trained
51 PhDs and Post Docs Trained	**54** Student Exchanges	**31** Student Exchanges
39 Student Exchanges		





Key Deliverables and Deployable Outcomes include:

Solar Energy Research Institute for India and the United States (SERIIUS):

- Heliostat development
- Reliability Studies for Photovoltaics in India
- Soiling Mitigation for PV Modules
- Super-critical CO_2 laboratory scale test loop facility
- Small-scale solar receivers for s-CO_2
- New absorber coating material with high thermal stability and high corrosion resistant property
- Use of Flexible Glass for Substrates and Encapsulation
- Novel Processing for Silicon Solar Cells

Center for Building Energy Research and Development (CBERD):

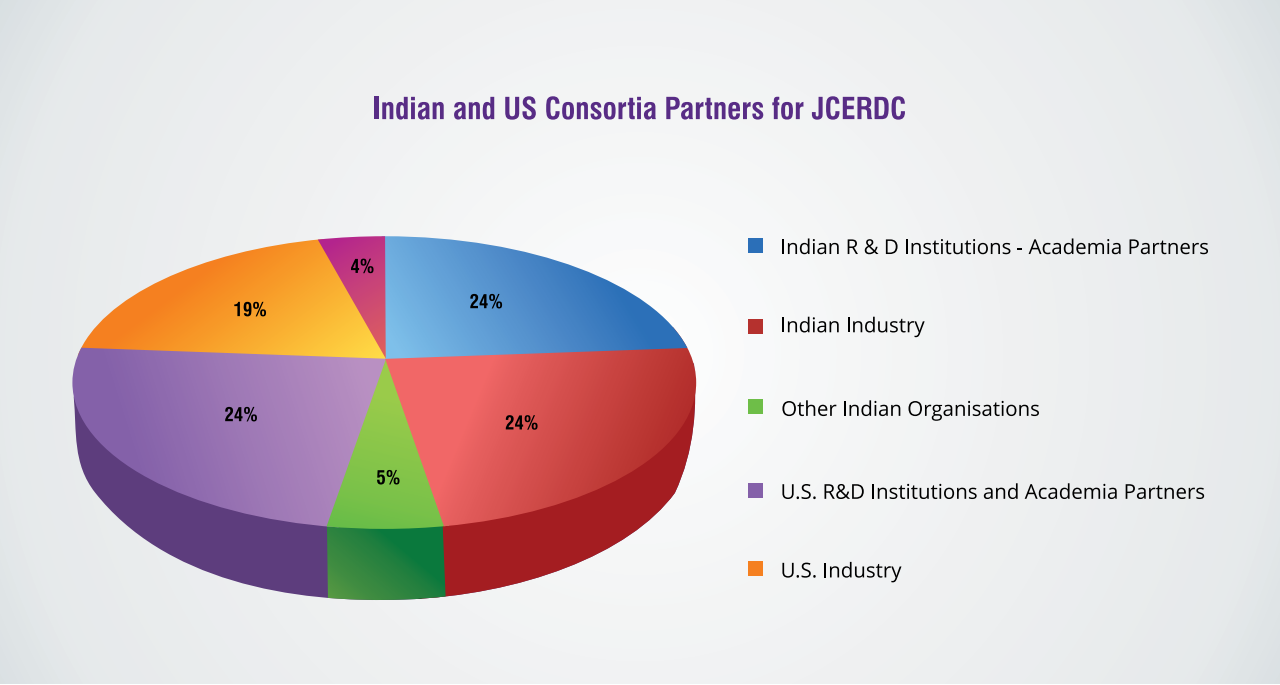
- COMFEN India & eDOT
- Cool Roof Calculator
- Phase change material ceiling tiles
- Laser Cut Panels
- Dedicated Outdoor Air System
- Indirect evaporative space cooling
- Affordable smart power strip
- Low energy wireless motion sensor
- Energy Information System Packages

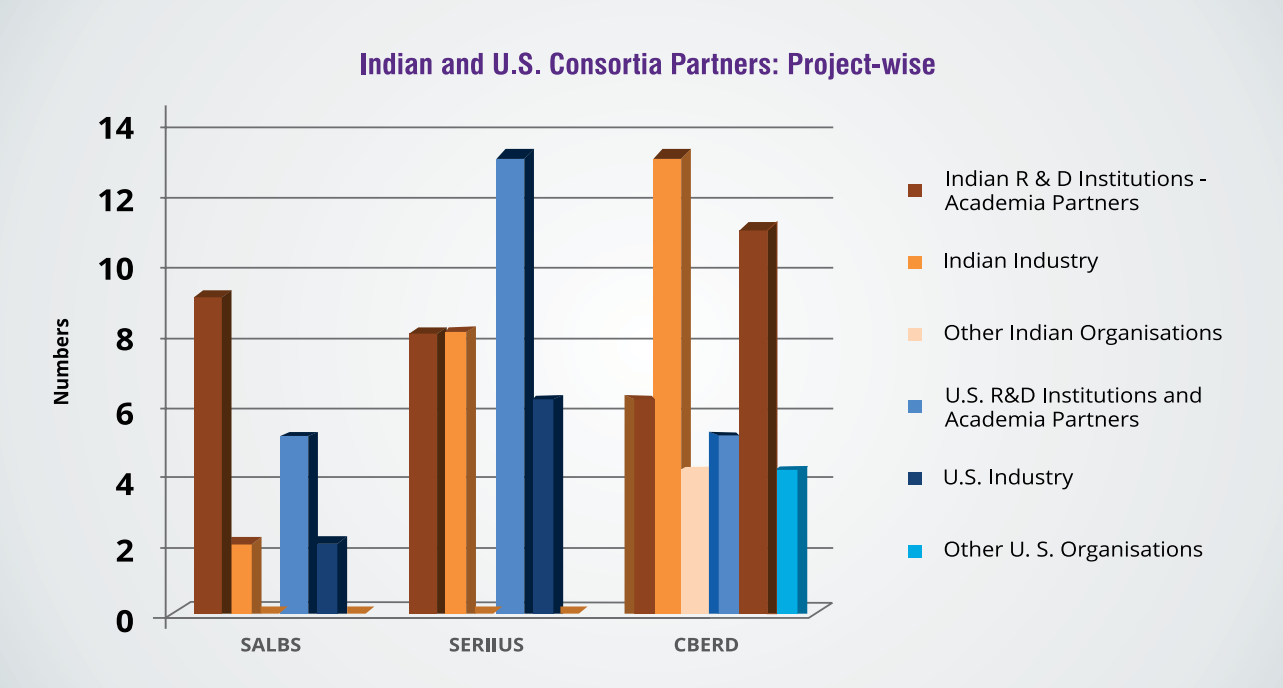
Sustainable Advanced Lignocellulosic Biofuel Systems (SALBS):

- High biomass yielding abiotic stress tolerant sorghum, pearl millet and bamboo
- Low-input advanced feedstock production system
- Efficient pre-treatment & fermentation process
- Standardization & Certification protocols

Other Highlights:

- The Sixth Project Monitoring Committee (PMC) review meetings (on the India side) were held for all three consortia in July 2017 to monitor project progress in conformity with the outputs, milestones, targets and objectives.
- The three consortia have completed their project tenures and have since been successfully concluded.





JCERDC Phase II

Based on the success of Phase I of the JCERDC, both countries decided to expand the "Partnership to Advance Clean Energy Research (PACE-R)" to two new research areas critical to improving the reliability, flexibility, and efficiency of the electricity delivery system: **Smart Grid and Energy Storage**. This was envisaged to bring together top talent from both countries and generate key technological advancements through collaborations between U.S. and Indian researchers. The U.S. Department of Energy and the Government of India (through Ministry of Science and Technology) have each committed $1.5 million per year over a five year period (with 50% cost share coming in from the consortium partners).

After a multi-level, bi-national review process, a consortium titled **UI-ASSIST: U.S.-India collAborative for smart diStribution System wIth Storage** led in India by *Suresh C. Srivastava* from the Indian Institute of Technology (IIT) Kanpur, and in the United States by *Noel Schulz* from Washington State University, Pullman, was selected for award.

Project Objectives:

a. Develop and demonstrate the Distribution System Operator (DSO) functions for optimal utilization and management of Distributed Energy Resources (DER) by interfacing with DER control and microgrid control system as well as analysis of prototype feeders with high penetration of energy storage.

b. Address communication needs; data needs; security, including cyber-security; economy and resiliency issues; social issues; workforce requirements; policy recommendations; and suitable DSO functions.

Institutional Engagement: UI-ASSIST

India	USA
• Indian Institute of Technology Kanpur, Kanpur • Indian Institute of Technology Delhi • Indian Institute of Technology Madras • Indian Institute of Technology Roorkee • Indian Institute of Technology Bhubaneswar • The Energy and Resources Institute, New Delhi • NTPC Energy Technology Research Alliance, Greater NOIDA • BSES Rajdhani Power Ltd., New Delhi • UP Power Corporation Limited, Lucknow • Power Grid Corporation of India Limited, Gurgaon • Customized Energy Solution, Pune • GE Global Research, Bengaluru • Synergy Systems and Solutions, Gurgaon • Mindteck, Bengaluru • Panasonic India Pvt. Ltd., Gurgaon	• Washington State University, Pullman, • Massachusetts Institute of Technology, Cambridge • Texas A&M University, College Station, • Hawaii Natural Energy Institute, Honolulu • Idaho National Laboratory, Idaho Falls, • Lawrence Berkeley National Lab, Berkeley • Snohomish County Public Utility District, Everett • AVISTA Utilities, Spokane, WA • Burns and McDonnell, Kansas City, ETAP, Operation technology, Inc., Irvine • National Rural Electric Cooperative Association, Arlington • GE Grid Solutions • Clean Energy Storage, Inc., Temecula • ABB Inc, Sugarland • Philadelphia Navy Yard, Philadelphia

Affordable Blood Pressure Measurement Technologies for Low-Resource Settings in India and the U.S.

The purpose of the **Indo-U.S. Grand Challenge Initiative** funded by the Science & Engineering Research Board (SERB), Department of Science & Technology, Government of India and the National Institute of Biomedical Imaging and Bioengineering (NIBIB), NIH, USA, was to encourage collaborative research within and between both the countries to propose new approaches to the measurement of Blood Pressure that are unobtrusive or passive, low-cost and which can automatically provide frequent data recording and reporting to healthcare workers as well as feedback to the patients.

Progress thus far:

- Two Calls for Proposals completed.
- 6 teams funded on the Indian side.
- 5 teams funded on the U.S. side.
- Indian Teams:
    - o Patents: 4
    - o Publications> 25

Highlights of the Year:

- A meeting to review the progress of the six Indian teams was held in Bangalore on 27th June 2017. The committee noted that as an overall outcome of the program, the SERB-NIBIB initiative has succeeded in creating a group of scientists and engineers sensitized in this niche area. Moreover, new knowledge and several promising leads have been generated. Several of the mid-to-long-term leads generated through this program may be poised to find interesting applications in areas other than blood-pressure measurement.
- All the Indian projects under the first and second call have completed their project tenure and have successfully concluded.

Partnerships for International Research and Education (PIRE)

PIRE or the **Partnerships for International Research and Education** is the U.S. National Science Foundation's flagship international program to support high quality research and education projects across all disciplines. The program aims to leverage the resources of individual funding agencies towards advancement of knowledge and the individual efforts of research groups cutting across national boundaries. Science and Engineering Research Board (SERB) entered into a formal understanding with NSF to partner for the PIRE program. IUSSTF is the implementation partner for the program on behalf of SERB.

Progress thus far:

The Project selected for award against the 2014 Call was titled, "GROWTH: Global Relay of Observatories Watching Transients Happen". GROWTH is an international collaborative network of astronomers and telescopes dedicated to the study of short lived cosmic transients. The timely characterization provided by GROWTH will be vital to realizing the scientific value provided by these discoveries.

Partners: India: *Inter-University Centre for Astronomy and Astrophysics;* ***U.S.A:*** *San Diego State University, University of Maryland, Pomona College, University of Wisconsin, Los Alamos National Laboratory;* ***Japan:*** *Tokyo Institute of Technology;* ***Sweden:*** *Oscar Klein Center at Stockholm University;* ***Israel:*** *Weizmann Institute of Science;* ***Taiwan:*** *National Central University;* ***Germany:*** *Humboldt University of Berlin*

Highlights of the Year:

- A project Monitoring Committee Meeting was held on 26th June 2017 at Bangalore to review the scientific outcome of this project and monitor its progress in conformity with its objectives.
- At the GROWTH Annual Meeting held during this year, Project Partner(s) discussed time-domain science highlights from the past year, internship reports from students and postdocs and plans for the upcoming year, especially with the advent of the Zwicky Transient Facility and the increased sensitivity of Gravitational Wave detectors.

PACEsetter Fund

The Ministry of New and Renewable Energy (MNRE), Govt. of India and the U.S. Embassy support the **PACEsetter Fund (PSF)** that is an INR 50 crore (USD 7.9 million) fund jointly capitalized by the Governments of the India and the United States of America. The Fund's main purpose is to improve the viability of off-grid renewable energy businesses that sell small scale (under 1 megawatt) clean energy systems to individuals and communities without access to grid connected power or with limited/intermittent access (less than 8 hours per day).

Highlights of the Year

- Under the first call of the PSF program, nine projects were identified for award *(Annexure VII)*.
- A Techno Financial Review Committee meeting comprising of subject area experts, and representatives from MNRE, U.S. Embassy and IUSSTF was held on 27th March 2018 to evaluate the progress of teams awarded under the First Call.
- IUSSTF received 168 Expressions of Interest (EoI) in response to the second funding round in October 2016. Shortlisting of these EoIs is currently underway.

Research Initiative for Real-time River Water and Air Quality Monitoring

Recognizing the importance of developing online River Water and Air Quality Monitoring (WAQM) systems, the Department of Science and Technology (DST), Government of India and Intel® have collaborated to jointly initiate the **Research Initiative for Real-time River Water and Air Quality Monitoring.** The intent is to develop tools and constituent blocks than will enable end-to-end water and air quality monitoring systems on smart, networked, low-cost, low-power sensor nodes with large-scale cloud based data analysis. The program is implemented by IUSSTF.

Highlights of the Year

After a comprehensive review; four projects, two each in Air and Water Quality Monitoring were selected for award. The grantees were felicitated at an Award ceremony by Dr. Harsh Vardhan, Union Minister of Science & Technology, Earth Sciences, Environment, Forests and Climate Change in New Delhi on 16thJanuary 2018. The Projects awarded are listed in *Annexure VIII.*

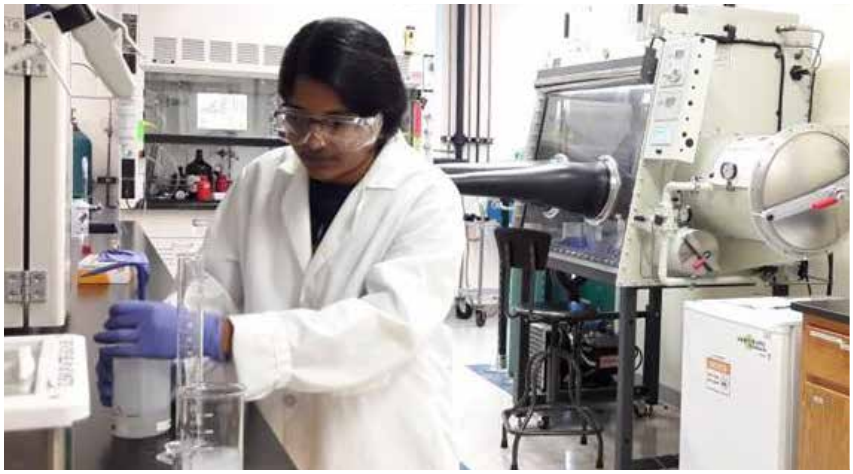
SECTION 4

VISITATIONS AND FELLOWSHIPS

Visitations and Fellowships

It has been unambiguously demonstrated that providing students and young scientists with an exposure to cutting-edge scientific research experiences at a formative stage not only broadens their intellectual horizons but also leads to increased engagements in scientific and technological research careers. A key area of focus is also to bring talented American students to research laboratories in India to build a deeper appreciation of the culture of innovation and long-standing tradition of scientific enquiry in India.

IUSSTF collaborates with several Federal agencies, Industry, Professional Bodies and Not-for-profit Organizations to administer a large number of Visitation Programs, across various domains and stakeholder levels.



Overall Matrix of Visitation Programs

S.No.	Name of Program	Partners*	Area	No. of Internships/ Fellowships
1.	Indo-U.S. Genome Engineering/ Editing Technology Initiative (GETin)	DBT	Genome engineering/editing technology	5 Internships 5 Fellowships
2.	Indo-U.S. Fellowship for Women in STEMM (WISTEMM)	DST	Science, Technology, Engineering, Mathematics and Medicine	10 Intership 10 Fellowships
3.	Water Advanced Research and Innovation (WARI) Fellowship	DST, UNL and DWFI	Water Science and Engineering	5 Student Internships; 5 Fellowships
4.	Bhaskara Advanced Solar Energy (BASE) Fellowship	DST	Solar Energy	7 Student Internships; 7 Fellowships
5.	SERB–Indo-U.S. Postdoctoral Fellowships for Indian Researchers	SERB	Focus areas of S&T	50 Fellowships
6.	Bioenergy-Awards for Cutting Edge Research (B-ACER)	DBT	Biofuel and Bioenergy	5 Student Internships; 5 Fellowships
7.	Building Energy Efficiency Higher & Advanced Network (BHAVAN) Fellowships	DST	Building Energy Efficiency	7 Student Internships; 7 Fellowships
8.	IUSSTF–American Physical Society Fellowships	APS	Physics	4 Professorships; 4 Fellowships
9.	ASM-IUSSTF Indo-US Professorship in Microbiology	ASM	Microbiology	Up to 5 Professorships
10.	Research Internships in Science and Engineering		All areas of Science and Technology	Up to 30 Internships
11.	Graduate Research Opportunities Worldwide (GROW)	SERB and NSF	All areas of Science and Technology	Upto 10 Fellowships
12.	Khorana Program for Scholars	DBT and WINStep Forward	Life Sciences	30 Internships
13.	IUSSTF-Viterbi Program	USC	Electrical Engineering, Computer Sciences and Computational Sciences.	20 Internships

14.	S.N. Bose Scholars Program	SERB and WINStep Forward	All areas of Science and Technology (except Life Sciences)	50 Internships
15.	Initiative for Research & Innovation in Science (IRIS) (Details provided in *Annexure IX)*	NCSTC, DST and Intel® through Intel® India	All areas of Science and Technology	For High School Students

*PARTNERS

- APS- American Physical Society
- ASM- American Society for Microbiology
- DBT- Department of Biotechnology, Govt. of India
- DST-Department of Science and Technology, Govt. of India
- DWFI- Robert B. Daughtery Water for Food Institute at the University of Nebraska
- NCSTC- National Council for Science & Technology Communication
- NSF- National Science Foundation (NSF)
- SERB-Science and Engineering Research Board, Govt. of India
- UNL- University of Nebraska- Lincon
- USC- University of Southern California, Los Angeles

Highlights of the Year

2 new Visitation Programs launched this year:

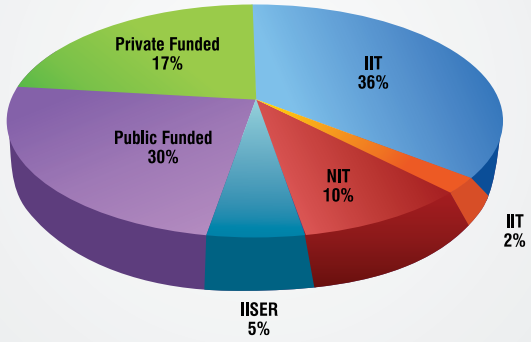
- **Indo-U.S. Genome Engineering/Editing Technology Initiative (GETin)** in significant areas of genome engineering/editing technology.
- **Indo-U.S. Fellowship for Women in STEMM (WISTEMM)** for Women Scientists, Engineers & Technologists in Science, Technology, Engineering, Mathematics and Medicine.

Actual Number of Exchanges in 2017-18	
Direction of Exchange	**Numbers**
India to U.S.	
• Undergraduate/Post-graduate	96
• Doctoral	62
• Post-Doctoral	75
Sub-Total	**233**
U.S. to India	
• Undergraduate/ Postgraduates	11
Grand Total	**244**

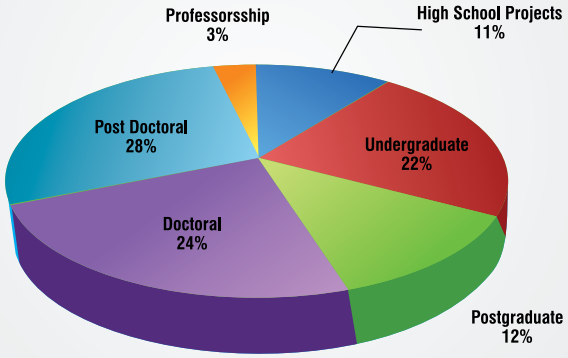
Distribution Across Institutions (2017-18)	
Host Institution	**Numbers**
India to U.S.	
• American	102
• Indian	11
Total	**113**

Top Host Institutions (2017-18)	
U.S.	**INDIA**
• Arizona State University	• Anna University
• Carnegie Mellon University	• Indian Institute of Science, Bengaluru
• Georgia Institute of Technology, Atlanta	• Indian Institute of Science Education & Research Kolkata
• Lawrence Berkeley National	• IIT Kharagpur
• National Renewable Energy Laboratory, Golden	• National Centre for Biological Sciences, Bengaluru
• Northwestern University	• National Centre for Cell Science, Pune
• Oak Ridge National Laboratory	• Tata Institute of Fundamental Research (T.I.F.R.)
• South Dakota State University	• University of Delhi
• Texas A&M University	• University of Kalyani, West Bengal
• University of California, Berkeley	• Variable Energy Cyclotron Centre (VECC), Kolkata
• University of Nebraska-Lincoln	• Vellore Institute of Technology University
• University of Southern California	
• University of Wisconsin-Madison, Wisconsin	
• Virginia Tech	

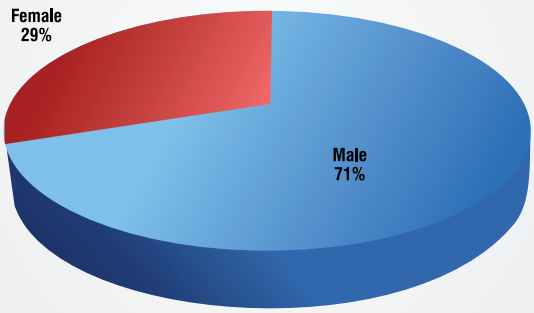
2017-18 Fellows and Interns: Parent Institutes in India



2017-18: Number of Intersnships/Fellowships and Professorships supported



Gender Distribution for the Visitation Programs



SECTION 5

PROMOTION, SHOWCASING OUTREACH AND EVENTS

Promotion and Showcasing

a. Film Portfolio

- **Film on IUSSTF:** As part of the Foundation Day celebrations, a **Short Film** on IUSSTF and its journey over the past 18 years was premiered and was very well-received by everyone present. The film can be viewed at https://youtu.be/0PcUxznaVX4
- **Film on USISTEF:** The film on the USISTEF Program presents an overview while touching upon individual awards and the overall outcome and impact. Short films on individual USISTEF awards have also been created that showcase and highlight the specific innovations and the impact they have/will make. All these films can be viewed at https://youtu.be/0PcUxznaVX4

b. Print Portfolio

- **Compendiums on Workshops and Joint Centres:** As a part of its mandate to promote, catalyze and seed bilateral S&T cooperation by creating "points of initiation", IUSSTF supports Bilateral Workshops, Conferences, and Symposia; and moving towards "medium-term engagements", IUSSTF supports Virtual Networked Joint Centers across the entire breadth of new and emerging areas of Science and Engineering. At IUSSTF's 18th Foundation Day celebrations, two compendiums that aim to capture not only the quintessential spirit and crux, but also the outcomes of all the Workshops and Virtual Networked Centers that IUSSTF has supported from 2014 through 2017 were unveiled.

- **USISTEF Report:** In an effort to showcase the accomplishments of the USISTEF awardee projects, IUSSTF put together a comprehensive Status Report titled *"Innovation – Commercializing Technologies for Societal Impact"* covering all the projects supported by the USISTEF Program thus far.

c. Alumni Portal

With the intention of creating a formal network of its stakeholders to establish not only an emotional bond of ownership with the organization, but more importantly to increase their levels of engagement; IUSSTF is setting up an *Alumni Portal* offering a bouquet of value-added services to its members.

d. Revamping the IUSSTF Website

A brand new IUSSTF website went live on IUSSTF's 18th Foundation Day. The primary objective for revamping the website was to upgrade its look and user experience, while retaining the current branding.

Events and Outreach

a. Celebrating 18 Glorious years of IUSSTF

The Indo-U.S. Science and Technology Forum (IUSSTF) celebrated its 18th Foundation Day on 21st March 2018 in New Delhi, in the presence of **Dr. Harsh Vardhan,** Union Minister for Science & Technology, Environment, Forest and Climate Change and Earth Sciences, Govt. of India and **Mr. Kenneth Juster,** Ambassador of the United States to India.

Delivering the Presidential Address on the occasion of IUSSTF's Foundation Day, **Dr. Harsh Vardhan** remarked that IUSSTF has proved to be a single-point entity that seamlessly brings together the manifold engagements in the U.S.-India collaborative arena in science, technology and innovation into fruition. He reiterated the commitment of the Indian Government to further strengthen this bilateral body enabling it to scale-up its current level of engagements by at least a few orders of magnitude. While quoting several key milestones in the collaborative journey thus far that included the creation of IIT-Kanpur, the Green Revolution, setting up of the Tarapur Atomic Power Plant, the Satellite Instructional Television Experiment etc.; the *Minister* noted that the India-U.S. partnership has come a long way, strengthening with time.

In his Keynote Address, the U.S. Ambassador to India, **Mr. Kenneth Juster** remarked that "partnerships such as ours are built on a foundation of trust and trust is rooted in spending time working together and solving problems together – This is what IUSSTF has quietly but effectively done – bringing scientists and engineers together and build trust".




An aptly titled Session - **Talks and Inside Stories with Friends of Forum** saw the participation of Former Secretaries of the Department of Science and Technology, Govt. of India - Prof. V.S. Ramamurthy and Dr. T. Ramasami who were also the Indian Co-Chairs of IUSSTF. In his address, **Prof. Ramamurthy** talked about how both countries have partnered to strengthen the entire S&T ecosystem. He also launched the newly revamped IUSSTF website. **Dr. Ramasami** pointed out that India's strength lies in resource optimization whereas for the U.S. it is value maximisation, and together there is a great opportunity for the two systems to develop not just technology but S&T solutions for meeting the R&D needs of the global population.

Dr. Ramasami also released two compendiums titled *"Building Scientific Networks: IUSSTF funded workshops 2014-2017"* and *"IUSSTF Joint Centers – Creating Virtual Partnerships".* These books aimed to capture the outcomes of all the Workshops and Virtual Networked Centers that IUSSTF has supported during the last four years - from 2014 through 2017.

Dr. Arabinda Mitra, the Founding Executive Director of IUSSTF, recalled the energy and seamless joint efforts put in by both the Governments to help create the robust IUSSTF of today – poised to confidently move into adulthood. **Dr. Rajiv Sharma,** Secretary, Science and Engineering Research Board, who served as the second Executive Director of IUSSTF, recalled the exciting journey of IUSSTF's two mega-initiatives - the Joint Clean Energy R&D Center (JCERDC) and the U.S.-India S&T Endowment Fund.

Other valued stakeholders who shared experiences about their interactions with IUSSTF included **Prof. Pradip Dutta** (Indian Institute of Science, Bengaluru), Co-PI of the "JCERDC-Solar Energy Research Institute for India and the United States (SERIIUS) Consortium"; **Prof. Rajan Rawal** (CEPT University, Ahmedabad), Co-PI of the "JCERDC-Center for Building Energy Research and Development (CBERD) Consortium", **Dr.Vineet Ahuja** (All India Institute of Medical Sciences, New Delhi), PI of IUSSTF Joint Center on "Bowel Diseases" and **Dr. Anurag Agrawal** (CSIR Institute of Genomics and Integrative Biology, New Delhi), PI

of Joint Center on Environmental Lung Diseases and PI of the USISTEF project titled "Forced Oscillation Device for Detection and Monitoring of Airway Diseases".

In his closing remarks, **Dr. Rajiv Tayal,** Executive Director of IUSSTF noted that "While resources available to IUSSTF through committed bilateral support have remained stagnant over the years - in fact their real value has diminished over time due to inflation, lower interest and currency conversion rates; we have still managed to grow by roughly 20 orders of magnitude over the last 18 years, mainly leveraging the resources from external agencies." He concluded by thanking everyone present and added that "To mark the arrival of our 18th anniversary, we re-dedicate ourselves to the next leg of the journey that is going to be even more glorious, with the excitement and belief that our best is yet to come. With the length and breadth of the two great nations of the world as our arena and the aspirations of their 1.7 billion people as the driving force, sky is the limit for us."

As part of the Foundation Day celebration, a **Short Filmon IUSSTF** and its journey over the past 18 years was premiered. IUSSTF also organized an **Exhibition** depicting its various programmatic activities where stakeholders across programs displayed their accomplishments.

b. Outreach

IUSSTF currently has a fairly active stakeholder base of at least 5000 individuals and 600 institutions in India and U.S. Additionally, IUSSTF has touched upon the lives of more than 20,000 people during the course of its journey over last eighteen years. The following are some of the key outreach activities during the last year:

- Executive Director, IUSSTF, visited technology incubators at IIT-Bombay; IIT-Kanpur; NCL Pune; as well as institutions in the United States such as University City Science Center, Philadelphia; Life Sciences Pennsylvannia; and, South Jersey Technology Park, Rowan University, and encouraged innovators and entrepreneurs to apply for the USISTEF Program.
- USISTEF activities and funding opportunities were displayed at a booth at the TiECon-Tech Expo and Exhibition. A number of USISTEF awardees also showcased their innovative products and technologies.
- The following are some of the media outreach that we have been able to accomplish:

    1. The films on *"Modular Diagnosis of Cervical Cancer using Smart Phone"* and *"Cultivated Sea-Plant based organic Bio-stimulants* "were screened during a Science Filmmaking Workshop held at Centre of Media Studies, University of Allahabad on 16 and 17 May 2017.
    2. National Telecast by RSTV (Rajya Sabha Television) on May 8 and May 11, 2017: As part of a program titled "Cutting Edge Technologies", stories on *"Affordable and User-centric Knee Joints to Remobilise Above-knee Amputees", "Development of a low-cost portable Auto-Refractor", "A novel way to Manage Fecal incontinence", "Hand-cranked Rugged* and *Affordable Defibrillator", "Hand-held Forced Oscillation Device"and "A Wireless Sensor based Wearable device for Heart Disease Management"* were showcased.
    3. Four USISTEF stories, namely *"World's First Foot Operated New Born Resuscitation Solution", "Diagnosis of Cervical cancer Utilising Smart Phone Diagnostics and Artificial Intelligence", "Affordable and User-centric Knee Joints to Remobilise Above knee Amputees"* and *"Wireless Sensor based Wearable Device for Heart Disease Management"* were showcased at the 3rd India International Science Film Festival held at the National Centre for Sustainable Coastal Management, Chennai on 15 October 2017.
    4. A National Workshop on Science Filmmaking organized by Vigyan Prasar, DST, GoI was held at Centre for Communication and Multimedia, Lady Doak College, Madurai on 14-16 December 2017 and the film on *"Seaweed based organic Bio-stimulants"* was screened to students of Mass Communication.
    5. The story on *"Cultivated Seaweed based organic Bio-stimulants"* was screened to students of media institutes at UNESCO House, New Delhi on Feb, 21, 2017.
    6. The USISTEF Story titled *"Affordable and User-centric Knee Joints to Remobilise Above knee Amputees in India and Globally"* received the "Special Jury Award" at the 8th National Science Film Festival of India, University of Guwahati held on 24th February 2018.

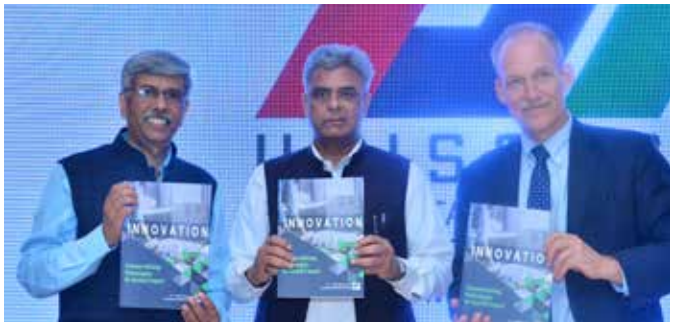
Board Meetings

a. The **Eighteenth Meeting of the Governing Board** (GB) of the Indo-U.S. Science and Technology Forum (IUSSTF) was held at New Delhi, under the Co-Chairmanship of **Prof. Indranil Manna,** Director, Indian Institute of Technology-Kanpur (Indian Co-Chair) and **Dr. Jonathan Margolis,** Deputy Assistant Secretary, Bureau of Oceans and International Environmental and Scientific Affairs, U.S. Department of State (U.S. Co-Chair), on 27th April 2017.

On this occasion, IUSSTF invited the Indian Principal Investigators of four Indo-U.S. Virtual Networked Centers (Biological Timing and Health Issues; Analysis of Variable Star Data; Study of Solar Coronal Composition and its Evolution with Solar Activity; and, Inflammatory Bowel Diseases), to give a broad overview about their research effort and its overall importance, along with the value that the Indo-U.S. collaboration has brought to the work. The **Annual Report** and the **Programmatic Progress Report** for the year 2016-17 was also released during this occasion.

b. The **Seventeenth Meeting of the U.S.-India Science and Technology Endowment Board** (USISTEB) was held at New Delhi, under the Co-Chairmanship of **Dr. Arabinda Mitra,** Advisor & Head IBCD, Department of Science & Technology, Govt. of India (Indian Co-Chair) and **Mr. George N. Sibley,** Minister Counsellor, Economic, Environment, Science & Technology Affairs, U.S. Embassy, New Delhi (U.S. Co-Chair), on 26th April 2017.

On this occasion, the USISTEF Secretariat screened a short film on the overall USISTEF Program as well as short films on individual USISTEF awards that showcased and highlighted the specific innovations. The occasion also provided an opportunity for the USISTEF Awardees to interact with the Board members. Additionally, the Secretariat formally released a comprehensive print portfolio of all the USISTEF awards thus far.



c. The **Eighteenth Meeting of the U.S.-India Science and Technology Endowment Board** (USISTEB) was held via DVC on 23rd February 2018 under the Co-Chairmanship of **Dr. Arabinda Mitra,** Advisor & Head IBCD, Department of Science & Technology, Govt. of India (Indian Co-Chair) and **Mr. J. Robert Garverick,** Minister Counselor, Economic, Environment, Science & Technology Affairs, U.S. Embassy, New Delhi (U.S. Co-Chair). The purpose of this meeting was to finalize the 8th Call Awards.

SECTION 6

MONEY MATTERS

Money Matters

IUSSTF receives funding from three broad channels:

- Direct support from the U.S. government
- Direct support from the Indian Government
- Extra Mural Programs (EMPs)

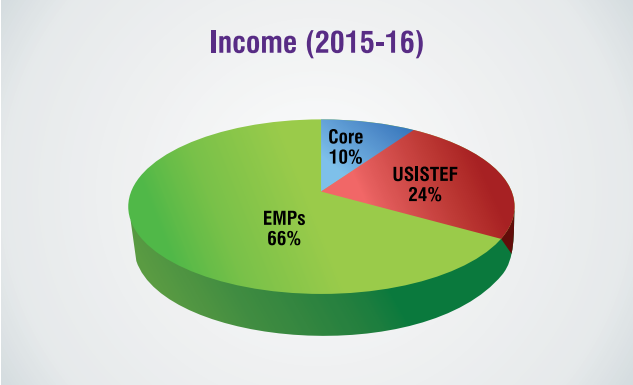
The support from the U.S. Government comes by way of annual interest on two separate Endowments (IUSSTF and USISTEF), to which the Indian Government provides matching grants annualy.

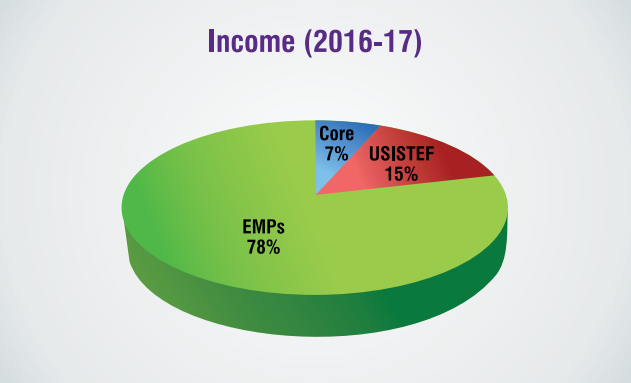
Support for the EMPs is received from various federal agencies such as DST, DBT, MNRE, SERB and Industries like Intel®and Lockheed Martin. Such support is provided in the project mode for the implementation of specific program(s), against a nominal management fee.

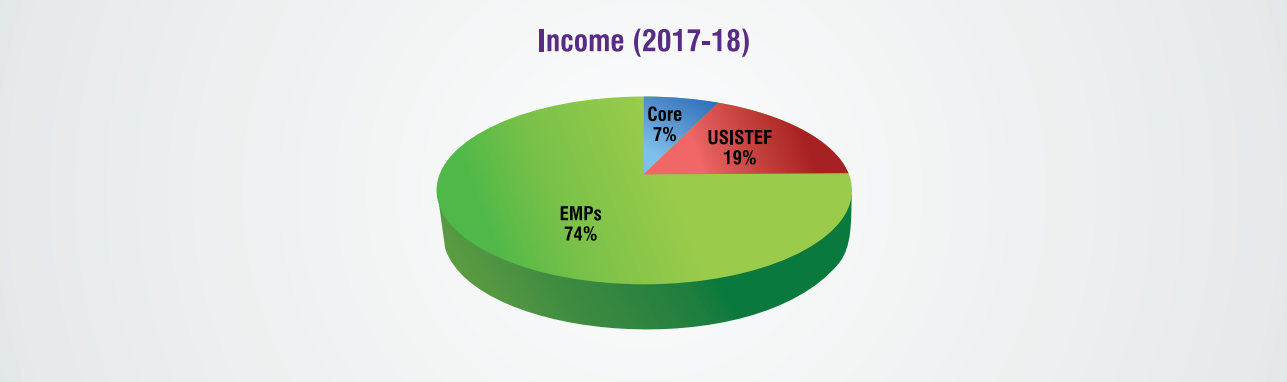
(A) Overall Income (2015-2018)

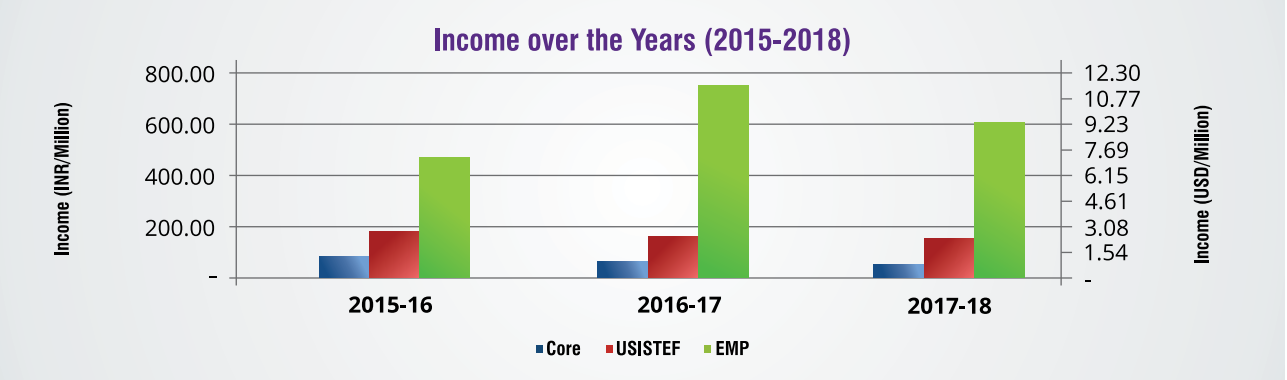
S.No	Head	2015-16		2016-17		2017-18	
		(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)
1	Core	68.54	1.05	60.76	0.93	53.30	0.82
2	USISTEF	169.42	2.61	143.73	2.21	138.76	2.13
3	EMPs	464.45	7.15	737.82	11.35	557.18	8.57
	TOTAL	**702.41**	**10.81**	**942.31**	**14.50**	**749.28**	**11.53**

**1USD= 65 INR ; The exchange rate is as per values on 31st March 2018.*









(B) Overall Expenditure (2015-2018)

S.No	Head	2015-16		2016-17		2017-18	
		(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)
1	Core	46.74	0.72	47.06	0.72	47.65	0.73
2	USISTEF	108.69	1.67	147.06	2.26	96.82	1.49
3	EMPs	437.67	6.73	383.04	5.89	639.50	9.84
4	Establishment Cost	28.49	0.44	28.30	0.44	36.38	0.56
	TOTAL	**621.59**	**9.56**	**605.46**	**9.31**	**849.35**	**12.62**

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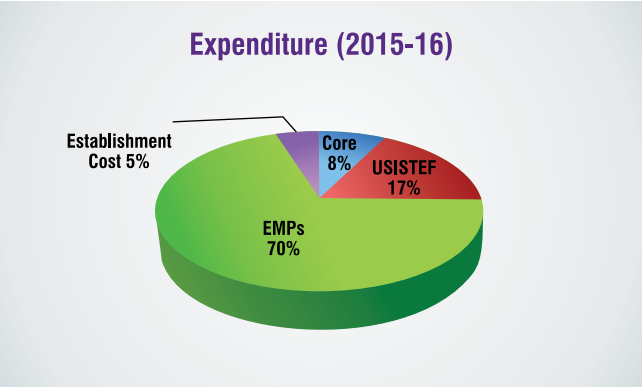
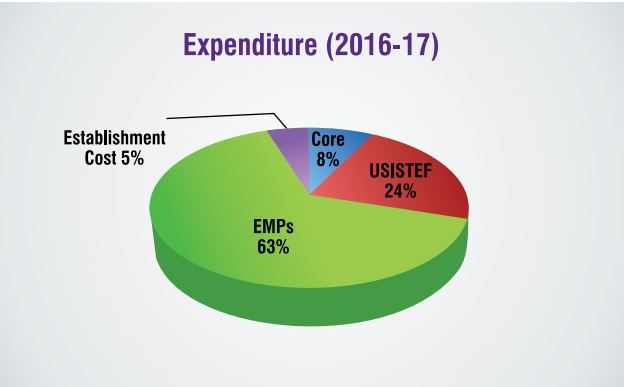
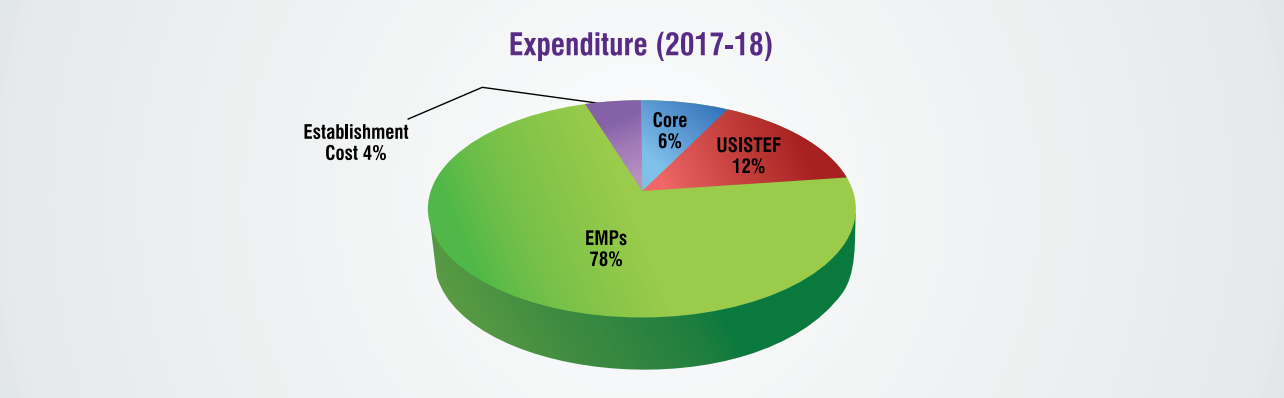
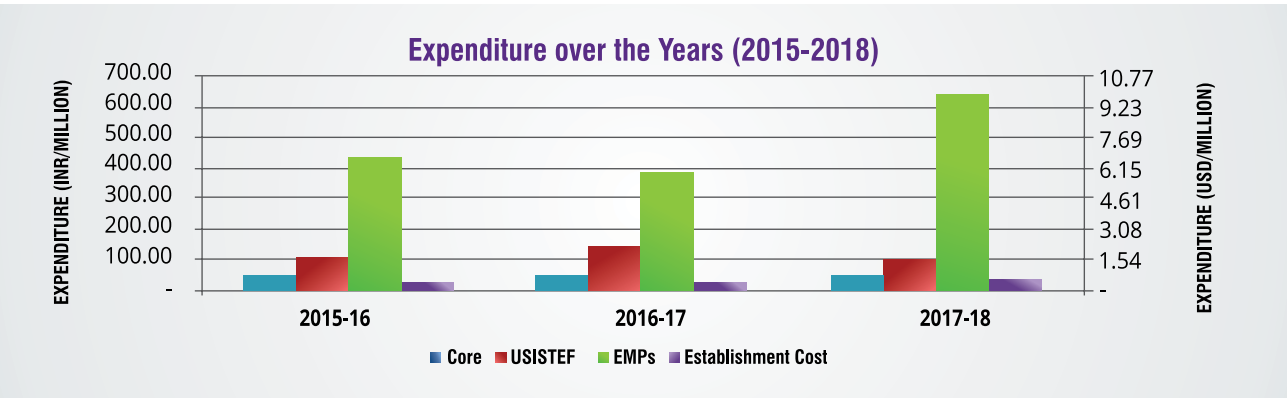




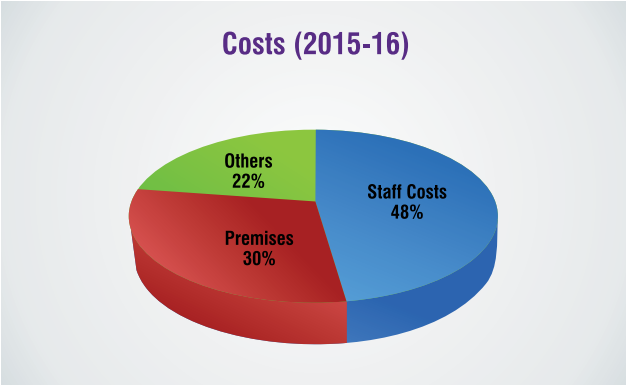


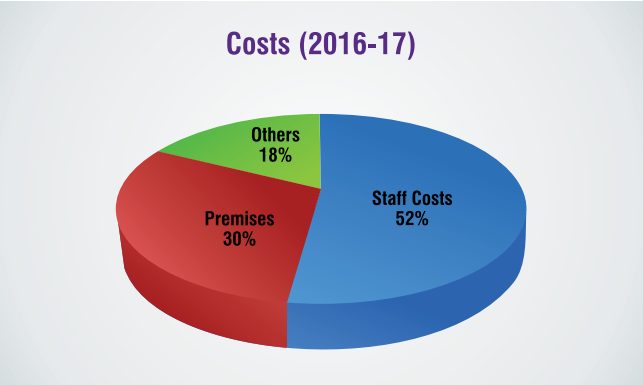


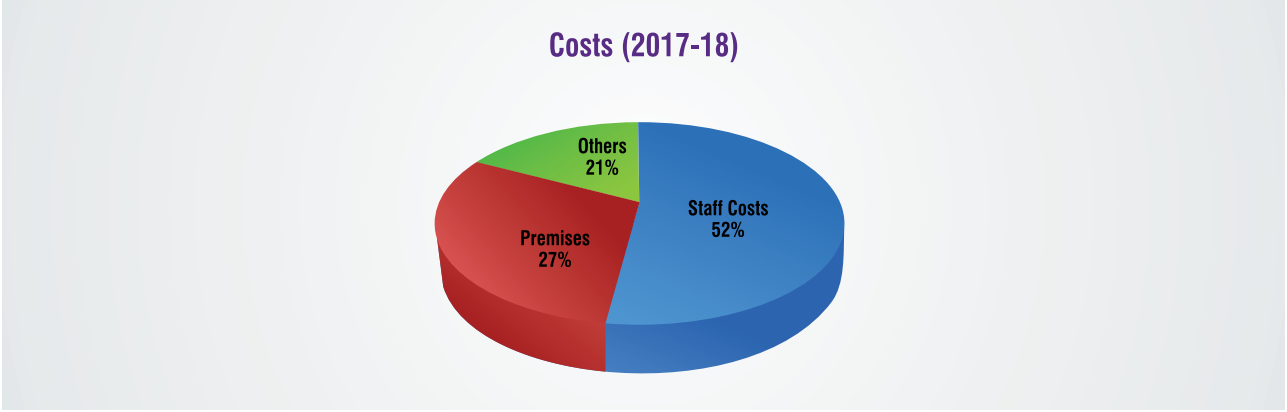
(C) Establishment Cost (2015-2018)

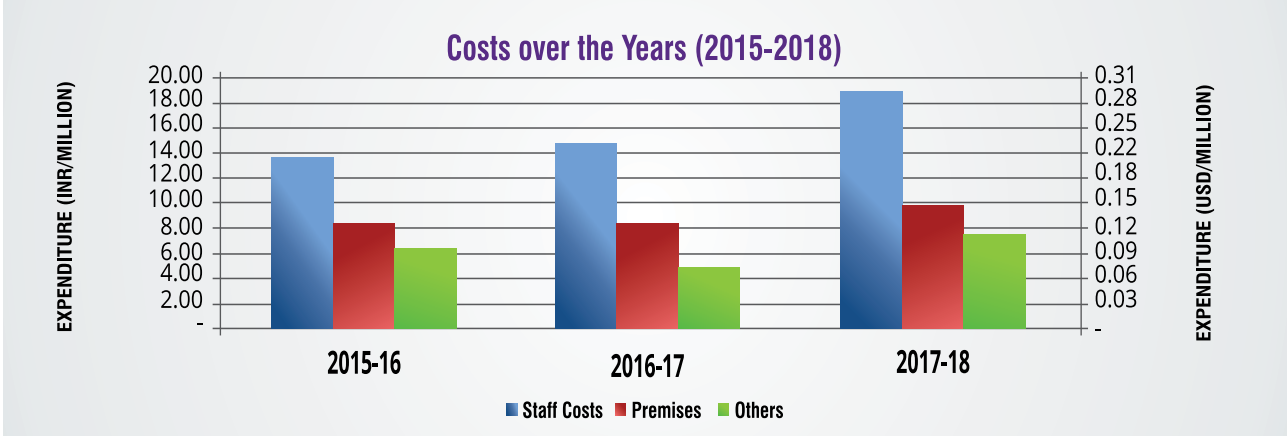
S.No	Head	2015-16		2016-17		2017-18	
		(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)
1	Staff Costs	13.60	0.21	14.79	0.23	18.95	0.29
2	Premises	8.49	0.13	8.50	0.13	9.94	0.15
3	Others	6.40	0.10	5.01	0.08	7.49	0.12
	TOTAL	**28.49**	**0.44**	**28.30**	**0.44**	**36.38**	**0.56**

**1USD= 65 INR ; The exchange rate is as per values on 31st March 2018.*









(D) Expenditures - IUSSTF Core Programs (2015-2018)

S.No	Head	2015-16		2016-17		2017-18	
		(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)
1	Bilateral Workshops	7.13	0.11	21.87	0.34	17.52	0.27
2	Virtual Networked Centres	13.93	0.21	11.78	0.18	16.39	0.25
3	Visitations	9.45	0.15	8.54	0.13	7.01	0.11
4	Frontiers of Science & Engineering	14.08	0.22	-	-	-	-
5	Direct Admin Expenses	2.15	0.03	4.87	0.07	6.73	0.10
	a) Governing Body Meetings	0.02	0.00	3.78	0.06	3.10	0.05
	b) Foundation Day Expenses	-	-	-	-	2.07	0.03
	c) Outreach Expenses etc	2.13	0.03	1.09	0.02	1.56	0.02
	TOTAL	**46.74**	0.72	47.06	0.72	47.65	0.73

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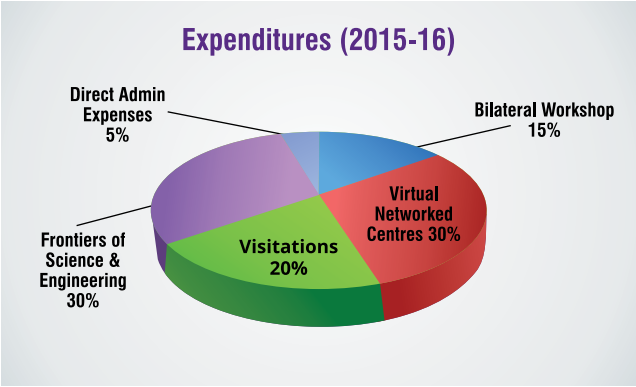
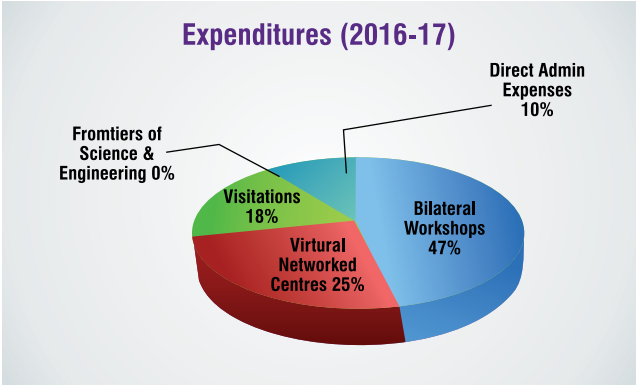
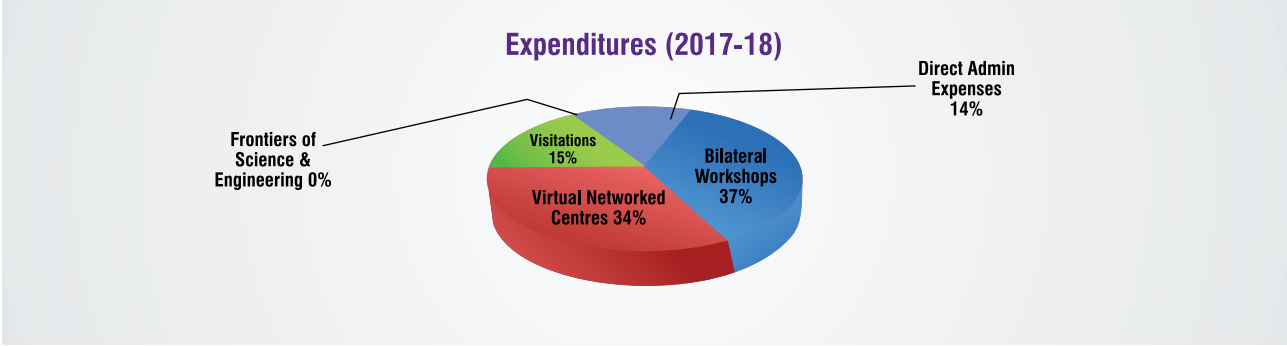
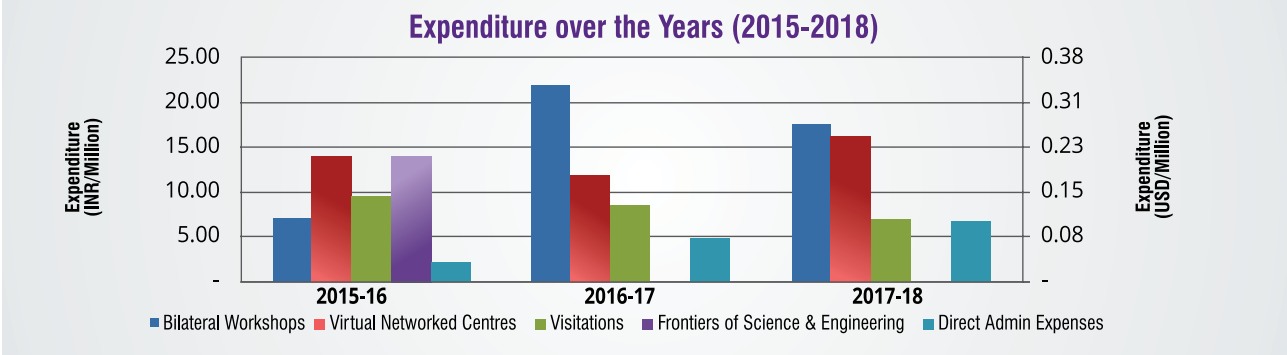




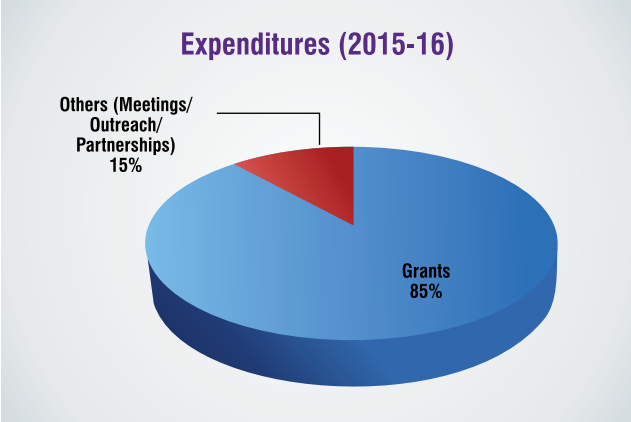


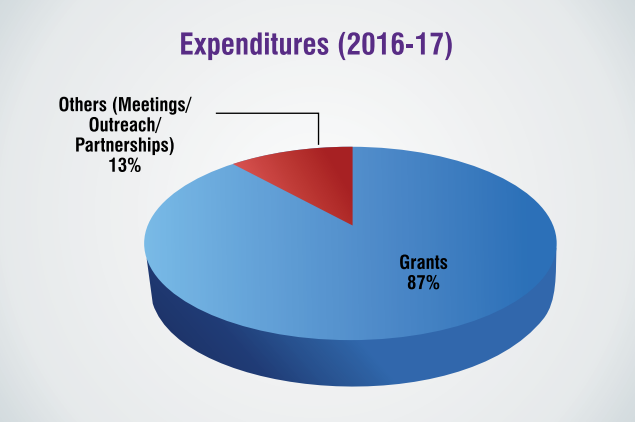


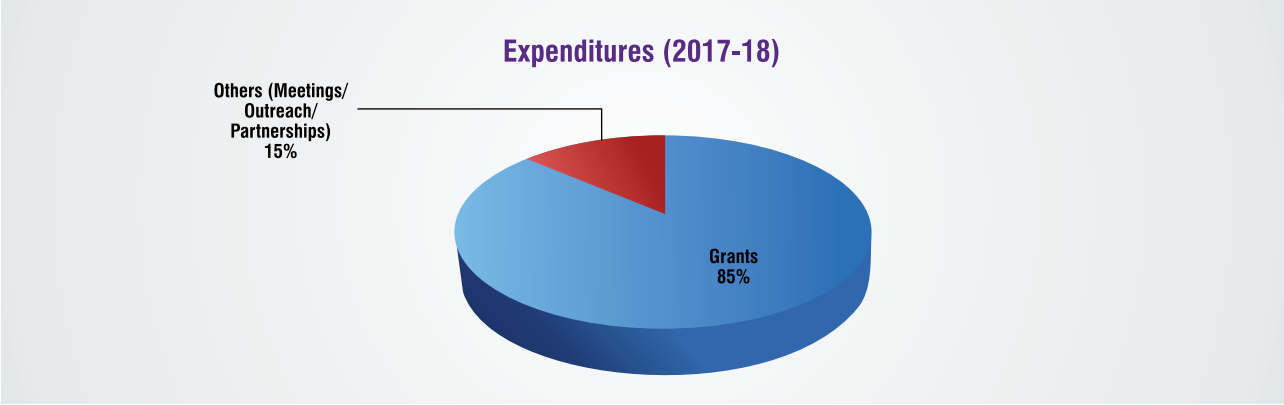
(E) Expenditures - USISTEF (2015-2018)

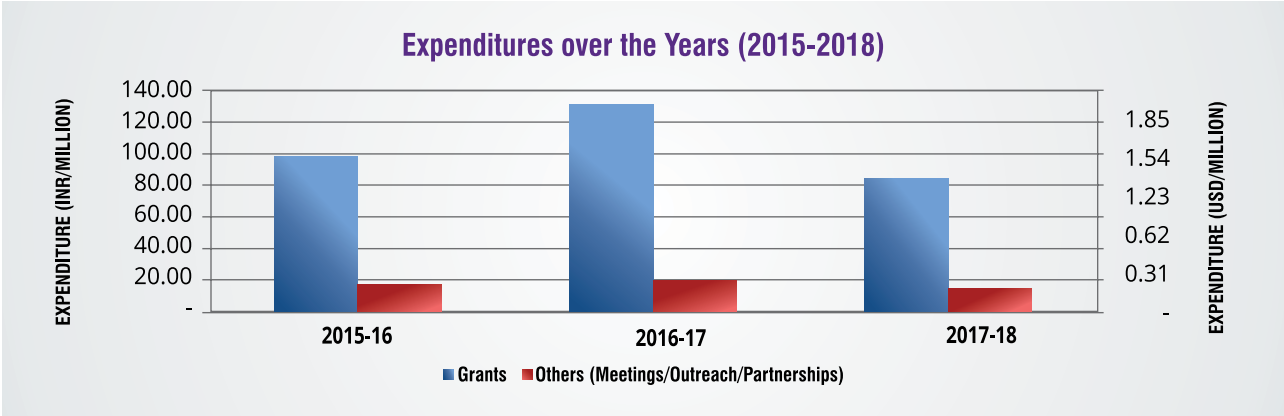
S.No	Head	2015-16		2016-17		2017-18	
		(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)
1	Grants	97.58	1.50	130.66	2.01	85.05	1.31
2	Others (Meetings/ Outreach/ Partnerships)	17.40	0.27	19.60	0.30	14.43	0.22
	TOTAL	**114.98**	**1.77**	**150.26**	**2.31**	**99.48**	**1.53**

**1USD= 65 INR ; The exchange rate is as per values on 31st March 2018.*





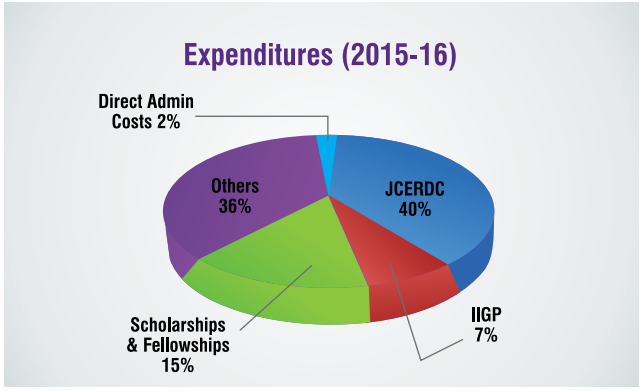


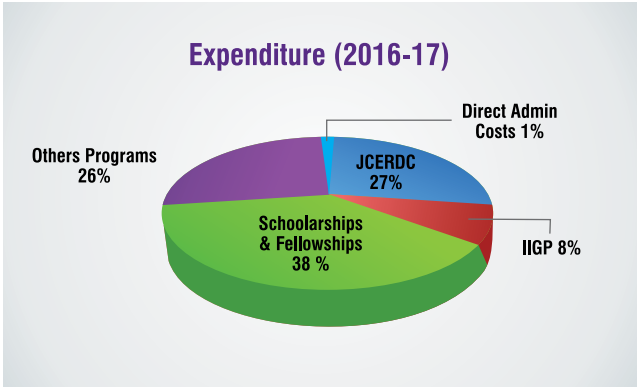


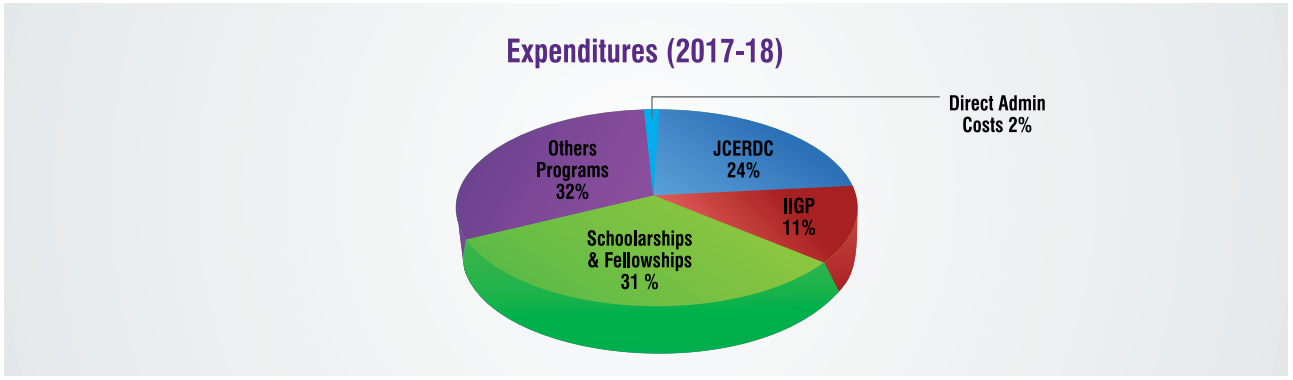
(F) Expenditures - Extra Mural Programs (2015-2018)

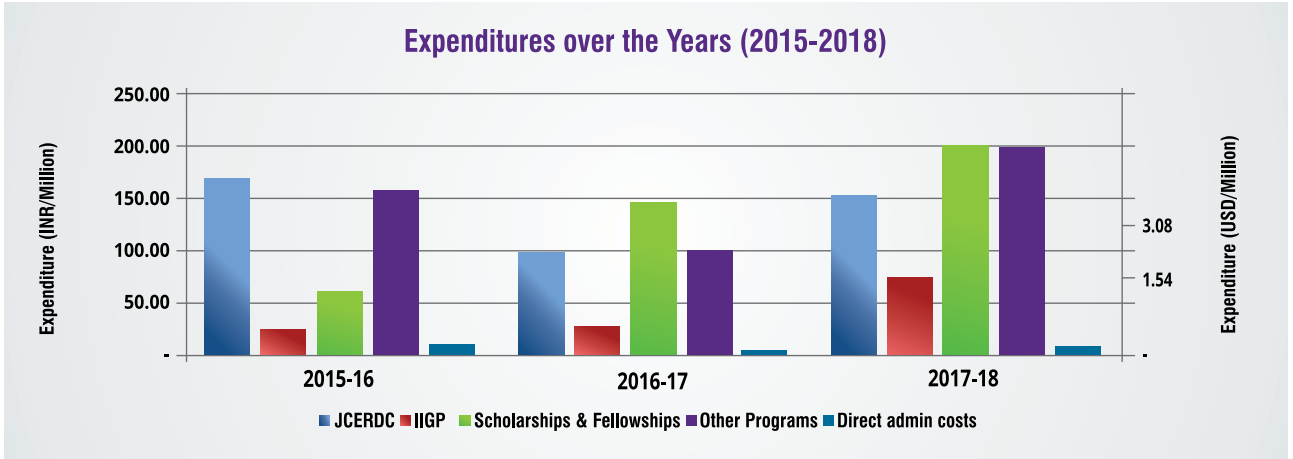
S.No	Head	2015-16		2016-17		2017-18	
		(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)	(INR/ Million)	(USD/ Million)
1	JCERDC	173.12	2.66	103.51	1.59	156.25	2.40
2	IIGP	31.40	0.48	30.94	0.48	72.70	1.12
3	Scholarships & Fellowships	67.17	1.03	144.46	2.22	198.56	3.05
4	Others Programs	157.84	2.43	100.26	1.54	202.60	3.12
5	Direct Admin Costs	8.14	0.13	3.87	0.06	9.39	0.14
	TOTAL	**437.67**	**6.73**	**383.04**	**5.89**	**639.50**	**9.84**

**1USD= 65 INR ; The exchange rate is as per values on 31st March 2018.*









SECTION 7

ANNEXURES

Annexure I

Workshops Awarded (2017-18)

S. No	Proposal Title	Indian PI	U.S. PI
1	*Discussion meeting on Mechanics / Materials Interface*	**R. Narasimhan** Indian Institute of Science, Bangalore	**Pradeep R. Guduru** Brown University, RI
2	*Indo-U.S. Consortium on Cancer Research*	**Bilikere S. Dwarakanath** Sri Ramachandra University, Chennai	**Sunil Krishnan** MD Anderson Cancer Center, TX
3	*Transcription, Chromatin Structure, DNA Repair and Genomic instability*	**Sathees C. Raghavan** Indian Institute of Science, Bangalore	**Sukesh R. Bhaumik** Southern Illinois University School of Medicine Carbondale, IL
4	*Scientific Imperatives for a Coordinated Indo-US Investigation of the Indian Ocean, 2016-2020 and Beyond*	**Satheesh Shenoi** Indian National Centre for Ocean Information Services, Hyderabad	**Raleigh R. Hood** University of Maryland, MD
5	*Curbing whitefly-plant virus pandemics - the departure from pesticides to genomics solutions*	**Pankaj Rathore** Punjab Agricultural University, Ludhiana	**Judith K. Brown** University of Arizona, AZ
6	*Environmental Geotechnics*	**D. N. Singh** Indian Institute of Technology Bombay	**Megan L. Hart** University of Missouri-Kansas City, MO
7	*Indo-US Symposium on Human Genetic Disorders of Prenatal and Postnatal Growth*	**Sankar Hariharan,** Govt. Medical College, Thiruvananthapuram	**Maxmillan Muenke** National Institutes of Health, MD
8	*Nanomaterials and nanotechnologies for clean energy generation and storage*	**P. Radhakrishnan** PSG Institute of Advanced Studies, Coimbatore	**Pradeep Haldar** SUNY Polytechnic Institute, NY
9	*Recent advances in magnetism and spintronics*	**Shiva Prasad** Indian Institute of Technology Bombay	**Hariharan Srikanth** University of South Florida, FL
10	*Masterclass in Uro-oncology*	**Anup Kumar** VMMC and Safdarjang Hospital New Delhi	**A. K. Hemal** Wake Forest Baptist Health Urology
11	*Nanotechnology Regulatory Science*	**S. Chandrasekhar** CSIR-IICT Hyderabad	**Sunil Krishnan** MD Anderson Cancer Center, TX

Contd.

S. No	Proposal Title	Indian PI	U.S. PI
12	*Emergency medical delivery system integrating unmanned vehicles*	**Kota Harinarayana** National Aerospace Laboratories, Bangalore	**C. Nataraj** Villanova University, Villanova, PA
13	*Symposium on Functional Materials (ISFM-2018): Energy and Biomedical Applications*	**Raju Kumar Gupta** Indian Institute of Technology Kanpur	**Vikas Berry** University of Illinois at Chicago
14	*Coastal groundwater dynamics combining future climate change and human development*	**K. Srinivasa-moorthy** Pondicherry University	**Saugata Dutta** Kansas State University
15	*5th Bangalore Cognition Workshop*	**BalajiJayaprakash** Indian Institute of Science, Bangalore	**Thomas D. Albright** Salk Institute for Biological Studies
16	*3D Printing: Solutions for Medical Devices*	**S. Swaminathan** SASTRA University, Thanjavur	**Sangamesh G. Kumbar** University of Connecticut
17	*Water-Food-Energy-Climate nexus: A perspective towards a sustainable future*	**Rajeev Pratap Singh** Banaras Hindu University	**Shannon L. Bartelt-Hunt** University of Nebraska-Lincoln
18	*Indo-U.S. Training Program & Workshop on Cancer Proteogenomics*	**Sanjeeva Srivastava** IIT Bombay	**D. R. Mani** Broad Institute of MIT and Harvard

Annexure II

Workshops Held (2017-18)

S.No.	Proposal Title	Date and Venue	Indian PI	U.S. PI
1	*Addressing the Nexus of Food, Energy, and Water (FEW) in the Context of Societal Challenges*	April 2017, Bengaluru	**Sekhar Muddu** Indian Institute of Science, Bengaluru	**Chittranjan Ray** University of Nebraska, Lincoln
2	*Scientific Imperatives for a Coordinated Indo-US Investigation of the Indian Ocean, 2016-2020 and Beyond*	September 2017, La Jolla	**Satheesh Shenoi** Indian National Centre for Ocean Information Services, Hyderabad	**Raleigh R. Hood** University of Maryland, College Park
3	*Drug Re-Purposing for Improving Radiotherapy of Cancer*	November 2017, Chennai	**Bilikere S. Dwarakanath** Sri Ramachandra University, Chennai	**Sunil Krishnan** MD Anderson Cancer Center, Houston
4	*Environmental Geotechnics*	December 2017, Mumbai	**D. N. Singh** Indian Institute of Technology Bombay, Mumbai	**Megan L. Hart** University of Missouri, Kansas City
5	*Improving Clinical Outcome after Stroke: Establishing Acute Stroke Care Pathways in India*	December 2017, New Delhi	**Padma Srivastava** All India Institute of Medical Sciences, New Delhi	**Pooja Khatri** University of Cincinnati, Cincinnati
6	*Curbing whitefly-plant virus pandemics - the departure from pesticides to genomics solutions*	December 2017, Ludhiana	**Pankaj Rathore** Punjab Agricultural University, Ludhiana	**Judith K. Brown** University of Arizona, Tucson
7	Simulating Long Time Reaction Dynamics: New Developments and Challenges	December 2017, Agra	**Srihari Keshavamurthy** Indian Institute of Technology Kanpur	**Christopher Jarzynski** University of Maryland, College Park

Contd.

S.No.	Proposal Title	Date and Venue	Indian PI	U.S. PI
8	Human Genetic Disorders of Prenatal and Postnatal Growth	December 2017, Thiruvanan-thapuram	**SankarHariharan** Govt. Medical College, Thiruvanan-thapuram	**Maxmillan Muenke** National Institutes of Health
9	Intrinsically Disordered Proteins: Forms, Functions and Diseases	December 2017, Mohali	**Samrat Mukhopadhyay** Indian Institute of Science Education and Research, Mohali	**Elizabeth Komives** University of California San Diego
10	Organometallic Chemistry: From Fundamentals to Applications	December 2017, Mumbai	**Balaji R. Jagirdar** Indian Institute of Science, Bangalore	**Matthew S. Sigman** University of Utah, Salt Lake City
11	Nanomaterials and nanotechnologies for clean energy generation and storage	January 2018, Coimbatore	**P. Radhakrishnan** PSG Institute of Advanced Studies, Coimbatore	**Pradeep Haldar** SUNY Polytechnic Institute, Albany
12	Recent advances in magnetism and spintronics	February 2018, Mumbai	**Shiva Prasad** Indian Institute of Technology Bombay	**Hariharan Srikanth** University of South Florida, Tampa
13	Discussion meeting on Mechanics / Materials Interface	February 2018, Coorg	**R. Narasimhan** Indian Institute of Science, Bengaluru	**Pradeep R. Guduru** Brown University, Providence
14	Nanotechnology Regulatory Science	February, 2018, Hyderabad	**S. Chandrasekhar** SIR-IICT Hyderabad	**Sunil Krishnan** MD Anderson Cancer Center, Houston
15	Emergency medical delivery system integrating unmanned vehicles	March, 2018, Bengaluru	**Kota Harinarayana** National Aerospace Laboratories, Bengaluru	**C. Nataraj,** Villanova University, Villanova
16	Transcription, Chromatin Structure, DNA Repair and Genomic instability	March, 2018, Bengaluru	**Sathees C. Raghavan** Indian Institute of Science, Bengaluru	**Sukesh R. Bhaumik** Southern Illinois University School of Medicine, Carbondale

Annexure III

Joint Centers Awarded (2017-18)

S. No.	Proposal Title	Lead Indian PI	Lead U.S. PI
1	Pragadh - Indo-US Center for Pan-Astronomical Deep Learning	**Ajit Kembhavi** Inter-University Centre for Astronomy and Astrophysics, Pune	**Ashish Mahabal** California Institute of Technology, Pasadena
2	Homocysteine Lowering Trials for Stroke Patients in India: Strategic Planning	**M.V. Padma Srivastava** All India Institute of MedicalSciences, New Delhi	**SanjanaDayal** University of Iowa, Iowa City
3	2D Nanomaterials for Energy Storage	**Ganesh Chandran Nayak** Indian Institute of Technology, Dhanbad	**Vikas Berry** University of Illinois, Chicago
4	Investigating Dark Matter and Star Formation in the Outer Disks of Galaxies using UV, optical and 21cm radio observations	**Mousumi Das** Indian Institute of Astrophysics,Bangalore	**Stacy McGaugh** Case Western Reserve University, Cleveland
5	Algorithms under Uncertainty".	**Amit Kumar** Indian Institute of Technology, Delhi	**Anupam Gupta** Carnegie Mellon University, Pittsburgh
6	Theoretical Analyses of Variable Star Data in the Era of Large Surveys	**Harinder. P. Singh** University of Delhi, New Delhi	**Shashi M. Kanbur** State University of New York, Oswego
7	"Reducing Cancer Mortality through Cancer Prevention"	**Pramod K. Garg** All India Institute of Medical Sciences, New Delhi	**Dean E Brenner** University of Michigan Ann Arbor
8	Sustainable Materials for Energy.	**K. N. Ganesh** Indian Institute of Science Education and Research, Pune	**Eric Borguet** Temple University, Philadelphia
9	Engineering Applications of Designer Nanoparticle Assemblies	**Bhagavatula L. V. Prasad** National Chemical Laboratory, Pune	**Sanat K. Kumar** Columbia University, New York City
10	Nanoscale Transport and Biological Interfaces	**Suman Chakraborty** Indian Institute of Technology, Kharagpur	**Narayana R. Aluru** University of Illinois, Urbana Champaign
11	Development of Durable Advanced Materials for Bioimplants".	**Harpreet Singh** Indian Institute of Technology, Ropar	**Sundeep Mukherjee** University of North Texas, Denton
12	Functional and Computational Proteomics	**Sanjeeva Srivastava** Indian Institute of Technology, Bombay	**Robert Moritz** Institute for Systems Biology, Seattle
13	Light Induced Energy Technologies: Utilizing Promising 2D Nanomaterials (LITE UP 2D)	**Vijayamohanan K. Pillai** Central Electrochemical Research Institute,Karaikudi	**Pulickel M. Ajayan** Rice University, Houston

Annexure IV

Details of USISTEF Projects to be Awarded under the Eighth Call (2017-18)

1. Low cost companion diagnostic test for predicting benefit of adjuvant chemotherapy in ER+ breast cancer	
Indian Partner	**U.S. Partner**
Vani Parmar Tata Memorial Centre, Mumbai	**Anant Madabhushi** Case Western Reserve University, Cleveland
An accurate and low-cost prognostic test based solely on digitized Hematoxylin and Eosin (H&E) tissue slides for identifying which Indian women with Estrogen Receptor positive (ER+) breast cancers will receive additional benefit from adjuvant chemotherapy.	

2. Blood Test for all forms of Active Tuberculosis (TB) for Commercialization in India	
Indian Partner	**U.S. Partner**
Sarman Singh All India Institute of Medical Sciences, New Delhi **Vivek Chandra** NextGenInvitro Diagnostics Pvt. Ltd., Gurugram	**Imran Khan** University of California, Davis **Stephen Dean** University of California, Davis
An accurate and low-cost prognostic test based solely on digitized Hematoxylin and Eosin (H&E) tissue slides for identifying which Indian women with Estrogen Receptor positive (ER+) breast cancers will receive additional benefit from adjuvant chemotherapy.	

3. VECTRAX, an Efficacious Long Lasting Semiochemical Based Attract and Kill Formulation for Management of Mosquito Vectors of Human Diseases	
Indian Partner	**U.S. Partner**
Markandeya Gorantla ATGC Biotech Pvt. Ltd., Secunderabad	**Agenor** Mafra-Neto ISCA Technologies, Riverside
Vectrax is a patented floral attractant and phagostimulant blend of sugars and proteins with lethal doses of insecticide that lures the mosquito to feed continuously until it is fully engorged. It is a slow-release, sprayable formulation that can be used through micro and macro bait stations and can sustain its attract and kill capacity in the field for weeks at a time.	

Contd.

4. Precise Fertilizer Applicator for Doubling farmers' profits	
Indian Partner	**U.S. Partner**
Ayush Nigam Distinct Horizon Pvt. Ltd., Hyderabad **Swapnil** Distinct Horizon Pvt. Ltd., Hyderabad	**Shalu Umapathy** IDEO.org, San Francisco
Precision application of fertilizer through a powered Urea Deep Placement (UDP) applicator that is integrated with soil testing. The team claims 25% increase in yields; 40% reduction in fertilizer consumption; 7-8 times reduction in labour requirement; doubling of farmers' profits; and increasing soil organic content.	

5. Test4Safety: Detection of Adulteration in commonly consumed liquids	
Indian Partner	**U.S. Partner**
Deepa Bhajekar D Technology Pvt. Ltd., Mumbai	**Deepak Mehrotra** Data Analytics Company, Agoura Hills
A method for quick detection of food adulteration, the technology involves a handheld pocket scanner that transmits a low-power laser beam into the test sample. The captured Raman response is compared to the "golden signature" in a cloud-based database. The user gets instant verification on their phones if the food product is genuine.	

Annexure V

Details of USISTEF Projects Awarded through the past Seven Calls

S. No.	Project Title	Lead Indian PI	Lead U.S. PI
First Call			
1	A fair price for healthy fruits & vegetables: Helping farmers access cold-storage technology	**Rustom Irani** Chirag Iceling Pvt. Ltd. Mumbai	**Sorin Grama** Promethean Power Systems, Boston
Second Call			
2	Mobile phone based HbA1c analyser	**Sidhant Jena** Janacare Solutions Private Limited New Delhi	**Stephen Chen** Teco Diagnostics
3	A novel way to manage fecal incontinence in non-ambulatory patients	**Nishith Chasmawala** Consure Medical Pvt. Ltd. Surat	**Matt Durack** Lunar Design, San Francisco
Third Call			
4	Commercialization of cultivated sea plants based organic bio-stimulants for applications in the USA	**Abhiram Seth** Aquagri Processing Pvt. Ltd. New Delhi	**Ganesh Vishwanath** SeaNutri LLC, Hayward
5	Solar Electric Tractor-Agriculture and Power	**Parimal Shah** Lovson Enterprises Pvt. Ltd Ahmedabad	**Keith Rutledge** Solectrac LLC, Willits
6	Affordable, clean cookstove and electric power sources for rural India	**Neha Juneja** Greenway Grameen Infra Pvt. Ltd., Navi Mumbai	**Aleksandr Kushch** Hi-Z Technology Inc., San Diego
7	Affordable and User-Centric Knee Joints to Remobilize Above-Knee Amputees in India and Globally	**Pooja Mukul** Bhagwan Mahaveer, Viklang SahayataSamiti (BMVSS), Jaipur	**Krista Donaldson** D-Rev, (Design Revolution), San Francisco
8	Easy to use, Integrated Neonatal Resuscitation Solution	**Avijit Bansal** Windmill Health Technologies New Delhi	**Dan Harden** Whipsaw, San Jose
9	OneBreath: Affordable mechanical ventilation for India	**Ashwin Naik** Vaatsalya, Bangalore	**Matthew Callaghan** OneBreath, Inc., Palo Alto

Contd.

S. No.	Project Title	Lead Indian PI	Lead U.S. PI
10	Commercializing a scalable low-cost arsenic remediation technology for societal impact	**Joyashree Roy** Jadavpur University, Kolkata **Raja Mohanty** Luminous Water Technologies Pvt. Ltd., New Delhi	**Shashi Buluswar** ITT Inc., Oakland **Ashok Gadgil** Lawrence Berkeley National Laboratory, Berkeley
11	Blindness Prevention through Integrated Smartphone Technology	**Nahush Katti** Doctor On LLC Columbia, MO	**Vikram Arun** Doctor On LLC Columbia
Fourth Call			
12	Transforming arsenic and fluoride crisis in drinking water into an economic enterprise	**Abhijeet Gan** Rite Water Solutions (I) Pvt. Ltd., Nagpur	**Mike German** WIST, Inc, Brighton
13	Development of a low-cost, portable auto-refractor	**Sriram Ravilla** Aurolab, Madurai	**Shivang R. Dave** PlenOptika, Somerville
14	Developing novel biological seed treatments to confer abiotic stress tolerance in crops	**Anup Karwa** SFPL Crop Life Sciences Private Limited, Krishidhan Seeds, Jalna, Maharashtra	**Rusty Rodriguez** Adaptive Symbiotic Technologies, Seattle
15	Commercializing a transformational modular roofing solution for low-income urban homes	**Hasit Ganatra** Re-Materials, Ahmedabad	**Shashi Buluswar** ITT Inc., Oakland
Fifth Call			
16	Handheld forced oscillation device for improved detection and monitoring of airway disease	**Anurag Agrawal** CSIR-Institute of Genomics and Integrative Biology, New Delhi	**Ashutosh Sabharwal** Cognita Labs and Rice University, Houston
17	Jaipur Belt (Belt system for body support)	**Ganesh Ram Jangir** Newndra Innovations Pvt Ltd, Jaipur	**Paul Scott** MedSpark, LLC, Obispo
18	Moving beyond the pavement: Affordable mobility for users around the world	**Sudhir Mehta** Pinnacle Industries Ltd., Pithampur	**Tish Scolnik** GRIT , Cambridge

Contd.

S. No.	Project Title	Lead Indian PI	Lead U.S. PI
Sixth Call			
19	Hand Cranked Rugged and Affordable Defibrillators for low resource settings.	**Anirudha Atre** Jeevtronics (P) Ltd., Pune **Ashish Gawade** Jeevtronics (P) Ltd., Pune	**Sreeram Dhurjaty** Dhurjaty Electronics LLC, Rochester
20	Modular diagnosis of cervical cancer utilizing smartphone diagnostics and artificial intelligence	**Adarsh Natrajan** Aindra Systems (P) Ltd., Bangalore	**Louis Auguste** Alexpath, Brooklyn
21	Wireless sensor based wearable device for heart disease management.	**Ravi Bhogu** Monitra Healthcare (P) Ltd, Hyderabad	**Joseph S. Menezes** DuPont, Sunnyvale
22	Fetal monitoring tool for grassroots level healthcare workers.	**Anirudh Chaturvedi** Brun Health (P) Ltd, New Delhi **Balaji Teegala** Brun Health (P) Ltd, New Delhi	**Ivan Tzvetanov** Berkeley
Seventh Call			
23	Digital braille accessibility for the blind made affordable by magnetic actuator technology	**Surabhi Srivastava** Inceptor Technologies Pvt. Ltd. (Innovision), SINE, Indian Institute of Technology Bombay, Mumbai	**Shraddha Sangelkar** The Pennsylvania State University, Erie
24	Low-cost, efficient and portable blood cell counter for point-of-care diagnostics.	**Usama Ahmed Abbasi** Pratimesh Labs Pvt. Ltd (MicroX Labs), Indian Institute of Science, Bangalore	**Leanna Levine** Aline, Inc, Rancho Dominguez
25	Millimeter wave transceiver development for high bandwidth secure wireless communication	**Neha Satak** Astrome Technologies Pvt. Ltd., Indian Institute of Science, Bangalore	**Raghunath Das** AniaraSpaceCom LLC, Princeton
26	Lightweight, Ultra-Fast, Next-Generation Magnetic Resonance Imaging (MRI) Scanners	**Arjun Arunachalam** Voxelgrids Innovations Pvt. Ltd., Bangalore	**ShahinPourrahimi** Superconducting Systems Inc., Billerica
27	Continent Ostomy Management Device	**Pranav Chopra** Crimson Healthcare Pvt. Ltd., New Delhi	**Peter Thier** Ximedica, Providence

Annexure VI

WEQ: Winners 2017

S.No	Name and Affiliation
1	**Bhavjot Kaur,** Co-Founder at Clinikk Healthcare,Bangalore
2	**Kausambi Manjita,** Co-Founder at Storeo.io, Bangalore
3	**Madhulika Mukherjee,** Co-Founder and CTO at Survaider, Bangalore
4	**Monika Shukla,** Co-Founder and CEO at LetsEndorse, Bangalore
5	**Meghna Saraogi,** Founder and CEO at StyleDotMe, Delhi
6	**Pallavi Bishnoi,** Co-Founder and COO at Real Time Renewables, Lucknow
7	**Sai Gole,** Co-Founder and COO at LeanAgri, Pune
8	**Supriya Rathi Bagri,** Founder and CEO at RoboVR, Mumbai
9	**Vishakha Singh,** Co-founder at VicitInfot Tech, Mumbai

Annexure VII

Projects Awarded under the PACEsetter Fund First Call

S. No.	Title of the Project	Lead Organization	Other Partnering Organization(s)
1	*High rate biomethanation of organic waste for generation of power for off-grid applications*	Ahuja Engineering Services Pvt Ltd (AES), Secunderabad	-
2	*Waste to Energy Innovation at Small-scale*	Grassroots Energy Inc., Massachusetts	SEWA Bharat, New Delhi
3	*Creation of an Energy Development Finance Company (EDFC) - Innovative Market Maker Debt provider to catalyze growth of market players in Decentralized Renewable Energy (DRE) based Energy Access Projects*	Energy Development Finance Company (EDFC), Ahmedabad cKers Finance Private Limited (cKers), New Delhi	-
4	*Development of user friendly gasifier and engine system for irrigation*	OptimaHeat Technologies, Paramakudi	-
5	*Microgrid Remote Monitoring & Control*	Customized Energy Solutions India Pvt. Ltd., Pune	-
6	*Solar PV Micro Grids for Remote Hamlet Electrification*	Mera Gao Micro Grid Power Pvt Ltd, Lucknow	-
7	*Powering Agriculture: Community Based Solar Pumps*	Environment Conservation Society (Switch ON), Kolkata	-
8	*Unlocking Clean Home Energy for the Base of the Pyramid: Developing and Piloting the World's First Pay-As-You-Go (PAYG) Integrated Home Energy System in India*	BioLite, Brooklyn, New York	-
9	*Remote Performance Monitoring & Outsourced Service Management of Solar Pumps and Off-grid Solar PV Plants through an online portal with pilot demonstration projects in Rajasthan, Chhattisgarh and Andhra Pradesh States*	Shri Shakti Alternative Energy Limited, Hyderabad	Satya ElectrocomPvt. Ltd., Faridabad

Annexure VIII

WAQM Program: Awardees

S No.	Project Title	Indian Lead PI (Name and Affiliation)	Other Partner(s)	U.S. Partner(s)
Air Quality Monitoring				
1	*"Streaming Analytics over Temporal Variables from Air quality Monitoring (SATVAM)".*	**Sachchida Nand Tripathi** Indian Institute of Technology Kanpur	Indian Institute of Technology Bombay (IITB) Indian Institute of Science (IISc) Bangalore Respirer Living Sciences Pvt. Ltd., Mumbai	Duke University, Durham
2	*"High resolution air quality monitoring and air pollutant data analytics".*	**Amrutur Bharadwaj** Indian Institute of Science, Bangalore	CSIR-Central Electronics Engineering Research Institute (CEERI), Pilani	University of Southern, California, Los Angeles
Water Quality Monitoring				
3	*"Design and Development of Aquatic Autonomous Observatory (NiracaraSvayamsa-sitaVedhShala - NSVS) for in situ Monitoring, Real Time Data Transmission and Web based Visualization".*	**Bishakh Bhattacharya** Indian Institute of Technology Kanpur	Kritsnam Technologies, Kanpur	Woods Hole Oceanographic Institution, Woods Hole
4	*"Integrated low cost water sensors for real- time river water monitoring and decision- making".*	**Arun Kumar** Indian Institute of Technology Delhi	National Institute of Science and Technology, Berhampur National Environmental Engineering and Research Institute (NEERI) Nagpur Centre for Materials for Electronics Technology, Pune University of Hyderabad, Hyderabad Asiczen Technologies India Pvt. Ltd., Bhubaneswar Sun Moksha Pvt. Ltd., Bangalore	University of California, Riverside Michigan State University, East Lansing Stanford University, Palo Alto New Jersey Institute of Technology, Newark

Annexure IX

The Initiative for Research & Innovation in Science (IRIS) and Intel International Science and Engineering Fair (ISEF) (2017-18)

IRIS 2017

Initiative for Research & Innovation in Science (IRIS),was held at Sam Manekshaw Centre, New Delhi from 16-18 November 2017 in which a total of 102 students from all over India participated. **Smt. MeenakshiLekhi,** Hon'ble Member of Parliament (Lok Sabha), New Delhi Constituency Chief Guest at The IRIS Inaugural Ceremony, congratulated participants for their innovative projects. Ms Isabella Detwiler, Deputy Minister Counsellor U.S. Embassy, New Delhi presented the Special Awards at the Valediction Ceremony. These awards were presented courtesy IRIS affiliation to Intel ISEF.

Final 20 projects were presented the IRIS Grand Award by **Dr. Rajiv K. Tayal,** Executive Director, Indo-US Science & Technology Forum, **Mr. Sujit Banerjee,** Department of Science & Technology, Govt. of India and **Mr. Kishore Balaji, Intel**. Winners of this award will represent India at the **IntelInternational Science and International Fair (ISEF)** 2018, in May 2018.

IUSSTF in partnership with Intel® announced a **Grand Award "IntelIndo-U.S. Science and Technology Forum Scientific and Cultural Visit to India Award" at the IntelScience & Engineering Fair (ISEF) 2017,** which entails a Scientific and Cultural exchange visit to India for a week, for four ISEF Best of Subject Category student winners from USA. These US Student winners also showcased their projects at the **Initiative for Research & Innovation in Science** (IRIS) National Fair from 16 – 18 November 2017.

ISEF 2017

The Indian team comprising of 29 school children travelled to represent India at the IntelInternational Science and Engineering Fair, the world's largest pre-collegiate high school science research competition held in Los Angeles, USA from 14-19 May 2017; and also got an opportunity to visit places of scientific and cultural interest in San Francisco. Team India won 9 Grand Awards, 11 special Awards, 1 Honourable mention in addition to having 6 planets named after them.

Team-India was flagged off on 12 May 2017 in New Delhi by Mr. Joseph Pomper, Deputy Chief of Mission, Embassy of United States of America, New Delhi, Mr. Chander Mohan, Head - NCSTC, Department of Science and Technology, Government of India and Dr. Anjan Ghosh, Regional Director, Corporate Affairs (Asia region), Intel.

During their stay in the U.S., the team visited University of Southern California, Walt Disney Studios, and Exploratorium and participated in various hands on activities at the Maker Faire at SFO. The Team also got an opportunity to meet with the Ambassador Venkatesan Ashok at the Indian Embassy, San Francisco.

Team – India achievements at ISEF over the years

Team India Winners that participated at ISEF	**:**	**125**
Awards won at ISEF by Team India	**:**	**134**
Number of Planets named after the Indian Students	**:**	**25**

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Progress for All"

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