With a dramatic leap in the World Bank’s ease-of-business rankings, India has opened doors for business.

As a stable government uses digital as a growth hack, the demand for electronic products in India is estimated to grow to $400 billion by 2022-2025 period. This surge in the demand for advanced TVs, mobile phones and computers will be a result of the increase in the disposable income of the middle class Indian consumers.

While the industry is poised to grow significantly with a strong economic outlook, the domestic production is expected to touch only $104 billion, creating a huge gap between the demand and the supply.

The government has been putting efforts to fill up the gaps by increasing investment from Rs 11,000 crore in June 2014 to Rs 1,27,880 crore in 2016. Programs and schemes such as Make In India, Digital India program, Start-up India, Smart Cities Program, National Solar Mission and National Electric Mobility Mission Program have created a huge excitement with their investment targets and invoked the entrepreneurial spirit.

Even as India takes centre stage as the world’s fastest growing economy in 2018, a vibrant entrepreneurship ecosystem clubbed with the evolving support for electronics manufacturing will make 2018-22 the tipping for Indian electronics sector…

Join us at 13th edition of IESA Vision Summit 2018, as we bring together a carefully curated content and global/domestic thought leaders to review the vision of a “Resurgent India” with a growth economy driving entrepreneurship and green shoots of electronics manufacturing, through this Newsletter.

It was a proud moment for IESA when the 13th edition of the Vision Summit was inaugurated amid an august gathering at The Leela Palace, Bangalore. This event witnessed the presence of over 1000 delegates who actively participated in the Summit that was spread over two days, February 27th and 28th, 2018. The speakers included industry visionaries, academic veterans, government leaders and representatives from national states as well as international frontiers. This edition of the IESA Vision Summit was centred around the theme Resurgent India – Electronics, Entrepreneurship and Economy and every speaker shared their knowledge, opinion, industry trends, opportunities and challenges involved in the ESDM domain in the country and around the globe. There were discussions, debates and deliberations.

The exhibitors pavilion had an impressive line-up right from young start-ups to stalls by established companies and various state governments.
Concluding the insightful panel discussions and keynote speeches all through the first day, followed the IESA Technovation Awards. It was a glittering event that recognized the most deserving players in the ESDM sector. The Chief Guest was Sh. Nara Lokesh, Hon’ble Minister of IT, Rural Devpt, Govt. of Andhra Pradesh coupled with few prominent Guests of Honor including Sh. Ram Mohan Mishra, IAS, Additional Secretary & Development Commissioner, MSME and Rajeev Khushu, Director - Corporate Affairs, Texas Instruments.

Another innovative and exciting event in the second day was the Makeathon Awards – an initiative by IESA to encourage the maker community in the country. In its third edition, 29 teams from across India participated in this unique competition and developed some amazing and innovative end-products within a span of 36 hours. The outstanding performance by TECH-INS made them the deserving recipient of the award wherein the team of 4 developed a product LOTO - which aims at minimizing the chances of workers being electrocuted at industries.

With the success of the Vision Summit year-on-year, it is proving to be the flagship event for the ESDM industry in India. From a 33 member in 2005, IESA has grown to 280+ in 2018. IESA is the strategic partner to the Government, industry, academia and international associations and it is glad to see such active participation from the industry stakeholders and is looking forward to adding more value during Vision Summit 2019.

Day 1: February 27, 2018
Welcome by
Ashwini K Aggarwal, Chairman, IESA

The theme this year is Resurgent India: Economy, Electronics and Entrepreneurship, and I think we have strategically set out the three pillars – the rise of ‘Make in India’, the emergence of ‘Make in India’ and the vision that we have for the next few years. This is a very exciting phase for the ESDM industry and the interest and passion shown by the Indian ESDM industry is making the Central Government take bold decisions and policy formulation to drive the ESDM domain forward. This is just the start of this vision journey and it will keep on improving year after year. A lot of improvements are in pipe-line and will be executed by 2020 and I think the net result of this is not just emergence of the market, but emergence of an industry in India. What I would like to deliver in this line is that on a scale of 0 to 10, we are not at 10 and we are not at 0 as well. What will be the vision for the next plan year is what this Vision Summit will explore. You have here thought leaders from across the globe who will discuss global interactions, trends, India opportunities, we want to build our innovators, and ecosystems. We don’t want to have just fabless elements on the supply chain build-up. I really look forward to engaging, looking at the next stage of resurging India. Once more, I welcome you all to the IESA Vision Summit 2018.
Inauguration
Address by

Shri. Shailendra Tyagi, Director, STPI Bangalore

I am proud to share with you that STPI and IESA have always been working together for the support and growth of the ESDM sector and this is the 13th successive Vision Summit which STPI boasts. As you are aware that in the last two decades, the Indian IT, ITeS industry and the electronics industry has matured enough and grown up the value chain. The industry has been contributing immensely in the GDP of the country, providing employment to millions. India’s Electronics System Design & Manufacturing sector continues to be critical for growth, innovation, disruption across multiple segments. Perhaps nothing demonstrates this more clearly than the widespread application of electronics components and products in sectors like automobiles, communications and many more. Electronics has been an agent of change in these segments enabling the creation of products that enhance efficiency. As we enter the next phase of innovation, we anticipate even more opportunities for the electronics industry for technologies such as robotics, AI, AR and VR. The government has a strong focus in developing the ESDM ecosystem in India. Several subsidies and incentives are on offer for setting up electronics manufacturing units in India. Some of the initiatives outlined in the National Electronics Policy and the National Telecom Policy are already in the process of implementation such as preferential market access, electronic manufacturing clusters and modified special incentive package schemes. This year, in the budget, the Government of India raised the allocation M-SIPS and EDFs to Rs 745 crores in creating an ecosystem so that the country can become a hub for electronics and technology manufacturing. As far as STPI’s initiatives are concerned, to support this ecosystem, STPI in association with the Government of Karnataka has setup a semiconductor tech management lab branded as SMART Lab: Semiconductor Measurement Analysis and Reliability Test (SMART) in Bengaluru. This initiative will largely benefit the semiconductor design start-ups in product development, creation of IT and enable them to test the semiconductor chip in this lab before sending them for mass production. I wish that the ESDM industry present here to leverage this facility. Besides this, STPI has also set up an Electropreneur Park which is an ESDM incubator in association with the University of Delhi as an academic partner and IESA as an implementation partner. The Electropreneur incubation center provides physical as well as technology infrastructure to the electronics start-ups across the country. This initiative has been enabling ESDM start-ups to innovate new products to boost the domestic manufacturing of electronics and encourage entrepreneurship. I am very confident that the IESA Vision Summit 2018 will provide the perfect platform for the ESDM sector to collaborate, both in technology and business. The summit continues to alleviate focus on the immediate opportunities in the indigenous ESDM landscape.

Address by Guest of Honor

H.E Ms. Dana Kursh, Consul General of Israel to South India

Just last month I had the honor of accompanying my Prime Minister Benjamin Netanyahu on his historic visit to India. Every step of the way of the 6 days visit was aimed at each one of you, to promote each and every one of your businesses, innovation, creativity, everything that you are trying to aim to accomplish, professionally and otherwise. We can help your company be more successful and hopefully build more ties with Israel. During our PM’s recent visit to India, the first decision that the PMs of India and Israel took was to outline the potential of investments. Many multinational companies are choosing to invest in Israel, basically...
buying and acquiring Israeli companies. The majority of the sponsors of this event are based in Israel. All of you have heard about the successful acquisition of Mobileye by Intel. Intel had chosen to buy this company for $15 billion. So, if they chose to invest, I think we can all look at how we can invest in one another. The two governments are trying to build the framework that will help you invest and promote your own businesses. Our two PMs had decided to allocate $40 million, $20 million each to help companies like yourself connect with Israeli companies and get funding to develop cutting-edge technology in fields such as IoT, cyber security, medical devices and automotive. Honorable Minister Kharge and his Ministry has signed an agreement with the State of Israel with our innovation authority called KIRD – Karnataka Israel R&D, again finding the way to help Israeli and Karnataka companies to find the next cutting-edge technology and to be able to succeed. I think you can ask yourself, why Israel, why Israel and India together. For this, I have three answers. First, we both are start-up nations and we are start-ups nations because of necessity. That leads me to the second point that connects this. Necessity is that occasion where we have to defend ourselves. So, we have to find technologies that will help us to safeguard our nations. And the third thing is the right ecosystem. And Bengaluru is the manifestation of this amazing ecosystem. We have here Minister Kharge who is pushing from the Government as much as he can build the ecosystem and enabling this ecosystem. We have each and every one of you here who is basically practicing and enjoying this ecosystem. You have cutting-edge academic exposure. So, you have the right ecosystem and when I see here in Bengaluru, I feel so much at home. Each of the Israeli cities like Jerusalem, Tel Aviv and Haifa, have similar ecosystems as here. So, these are things why Israel and India should come together. Request you to visit Israel for seminars, conference, business, or just pleasure and our Consulate, me and my team will be there to support you to be able to bring Israel and India, Israel and Karnataka much closer together.

Address by Chief Guest
Shri Priyank M Kharge, Hon’ble Minister for IT, BT and S&T, Govt. of Karnataka

IESA has done phenomenally well given that there it is extremely difficult to operate when you don’t have an ecosystem that supports a futuristic market like the ESDM sector. Bengaluru is one of the best ecosystems in the country for ESDM, entrepreneurship and innovation. It is true that Bengaluru is known for its many identities such as Pensioner’s Paradise, Lake City, Garden City, Science City, and the Silicon Valley of India. Most recently, at the Word Economic Forum, we were also rated as the most dynamic city in the world and the most adaptable for any digital change. It is because we have always been a city which always understands what is good for the people. I’d like to quote one of my favorite leaders, Pandit Jawaharlal Nehru from one of his speeches in 1962. He said “Bangalore in many ways is unlike other great cities of India. Most of the other cities in India remind you certainly of the present, certainly of the future but essentially of the past, but Bangalore as I said more than any other great city of India, is a picture of the future.” And today we are here actually painting the picture for the future! We have one of the most progressive minds in the country here. When we came out with the 1st IT Policy, lot of people were wondering why does the State need an IT Policy? But when we did come out with an IT Policy it helped a lot of people to come to the state with investments. Over the years, from IT services, we have majored into one of the world’s best ecosystem for research and development. Today we are ranked No. 4 globally and have beaten Tokyo, Chicago, and London as a global R&D hub and that has again spun off a society for innovation and invention. Now how many states can boast this? Right from IT-enabled services and IT services to an R&D hub, to an ideation, invention and invention hub, we are churning out entrepreneurs like never before. What is it that we are doing differently that are spurring entrepreneurs here? The Government of Karnataka has policies probably in every vertical to ensure that we encourage ecosystems across sectors. We have started something called the Start-up Cell in the department of IT BT, which handholds entrepreneurs through the maze of policies. We provide them with the whole host of things, we help them with idea validation, help them to find best of the mentors, we give them
opportunity to pilot within the Govt, we give them incubation opportunities, we give them networking opportunities, both in the domestic as well as in the international market and more importantly we give them access to funds, not only government funds but also private and venture capital funds. We are the only state in the country that successfully run seed funds as well as venture capitals. We have been doing it for years. Out of the 10000 start-ups that are there in Bengaluru, more than 5000 of them are registered with the Government of Karnataka and they are looking towards the Government to take them to the next level and that is exactly what we are trying to do. The Government of Karnataka is trying help entrepreneurship, trying to help the disruptors. We have very aggressive policy. In the last one year, we have helped more than 400 entrepreneurs and more than 250 start-ups - we have given seed capital. So, the Government has invested in start-ups. Every one and half days, we are encouraging one entrepreneur. How many states can boast of this? Nobody can do that. Government of Karnataka has created various Centers of Excellence within the state. We have India’s only Centre of Excellence in IoT, which has been up and running for a year and a half. We are running a Centre of Excellence in Aerospace and Defence. We have already launched the AI, Big Data and Machine Learning Centre of Excellence. We also have a Centre of Excellence in AI and Robotics. We have also come out with a Centre of Excellence in Cyber Security and more importantly Design, I think that is something that was lacking and that will be done within the next three months to encourage manufacturing in the ESDM sector. We are trying to see how to stimulate the ecosystem from the bottom of the pyramid. There is a report that got me thinking, prepared by IESA and it talks about Indian semiconductor fabless start-up ecosystem. It was a very interesting read. They have a very interesting table over here – competitive benchmarking table which speaks about India, US, Taiwan, Israel and China. They say that local fabs are present in all other countries except India. Talent for this industry is available in all the countries, experience is rated very high everywhere except China which is rated moderate experience but in other countries it is rated very high. Funding in India is unavailable. Presence of local OEMs not yet present in India, everywhere else it is highly present. It seems in India we have everything except the government support. This table has to be rectified quickly. We are trying to provide the best ecosystem here. If you can help us achieve the ecosystem that we are talking about, we can together build a Karnataka that is better, bolder and more progressive, not only for entrepreneurship but also for manufacturing. If you want resurgent India, it must surge in Karnataka. Only if it surges here, then only India will become resurgent. I will look forward to engaging with IESA and more success stories come out.

Release of IESA Member Directory 2018
Ashok Mishra, IESA Fabless Start-up Core Member & Founder and Managing Director, Si2chip Technologies

SFAL is an initiative by Fabless Core Initiative Group of IESA. We started this 3 years back. When we were having our first meeting, we were mulling over the fact that semiconductor being such an important part of the ESDM ecosystem, what are the kind of issues we need to address to make sure SFAL is established. First thing we wanted to do is establish in front of policy makers the importance of semiconductors in the overall ESDM system. The importance of fabless ecosystem in the overall progress of the ESDM ecosystem, the microchips would constitute 25% of the entire goodwill. The second part of it is that it pushes the entire ecosystem up if you add the microchip ecosystem or the fabless ecosystem in our country. We mulled over it. We thought if it is so important a sector, then why there is no policy around it, why there is no government initiative to bring up the fabless ecosystem. What we found is, that actually it is, not true. When we looked at the National Policy of 2012, we figured out that the National Policy of Electronics actually talks of achieving $50 billion turnover within India on VLSI by 2020. Now the only problem is that we are in 2018 and the reality is that we are nowhere close. For a massive country like India, having only 15 to 20 semiconductor start-ups is not something to be proud of. So, we understand that there is a gap. National Policy of Electronics Actually has all the policy framework to make a successful fabless industry but why it isn’t happening is something we have tried to analyze. The only thing we figured out is that somewhere the implementation part is missing. So, this is a problem, we have a policy but how do we implement it. The Karnataka ESDM policy which came out last November, spoke of creating Centres of Excellences in various sectors. We started engaging with the Government of Karnataka on the ESDM Policy and on 16th February, SFAL was announced by the Chief Minister during his budget speech. We highly appreciate this gesture by the Government of Karnataka. Some key points of SFAL – there has been certain VLSI incubators in India before but the scale at which SFAL is going to operate is unprecedented. The total budget in next 5 years is slated to be Rs 56 crores and it is the largest initiative ever undertaken by any state government in India. We do not intend to be only fabless incubator, but we want to create a fabless hub, to bring technology and business ecosystem under one roof, in one place. Incubators only support early-stage start-ups, SFAL is also going to have SME focus.

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Release of Fabless report/SFAL
Felicitation to Honour the IPO stellar success of

Tejas Networks represented by
Sanjay Nayak,
CEO & MD

Dixon Technologies represented by
Muneesh Dhawan,
VP, Business Development

Keynote 1:
Dr. Omkaram Nalamasu, Ph.D, Senior VP & CTO, Applied Materials, Inc & President, Applied Ventures LLC

Semiconductor manufacturing is really about the atomic control of the matter with precision. First of all, virtually every computer chip and every display and every solar panel that’s made in row uses Applied Material’s technology. We also believe that it is the foundational technology. Today we are at $15 billion revenues roughly and we spend close to $2 billion in R&D. The fundamental concept in material engineering is to control and lock out of atomic precision on industrial scale. The power of semiconductor technology is massive and there are numerous opportunities here. The industry is increasingly driven by materials and engineering. So, let’s talk about semiconductor big data and AI. If you look at the future then I think this it is going to be more data rich. There is a data deluge. Currently there are about 500 million tweets every day.

And, if you are looking at IoT by 2020 that will be generating 600 zettabytes of data. In terms of mobility, display screens are moving from LCD to organically LED and the complexity is going up and the CAPEX in this industry is going up rapidly to $17 billion- $18 billion. So, resolution is also going up with future displays being foldable display, OLED TV, and natural 3D display. Continuous innovation in semiconductors and storage innovation in battery technology will pave the way for growth in the ESDM sector. There is opportunity to accelerate and make electrification of vehicles in reality very fast with materials of new semiconductor innovation. There is a way of collaborating with industry, academia and start-ups, talking to customers and talking to partners so you have cost-effective products. So fundamentally what we need to think of are competencies, capabilities that are available across the globe so that you will have cost-effective commercialization.
Keynote 2:

Nivruti Rai, Vice President, Data Center Group, Country Head, Intel India

What are some of the technologies that are going to empower the future? India is trying for digitization. About 1.2 billion people have biometric ids in the country. By the year 2020 our assumption is we would have 50 billion connected devices. These 50 billion connected devices will generate data to the order of 160 zettabytes; zetta has 21 zeros behind it. So, the world of tomorrow will deal with data as the new currency. What is absolutely critical is connectivity. Today, we can experience 3G, 4G but we are aspiring to moving to 5G. We are looking at wireless technologies and other interesting technology deliver amazing user experience. Cloud will have a lot of ability for storage, analytics, whether it is based on AI or not. So, it is virtuous connectivity that enables growth. Prof. Andrew Ng, father of AI said, ‘AI is the new electricity. It is as essential to the needs as electricity was some years ago. So, AI is going to be everywhere. AI will be leveraged wherever there is some amount of thinking required.” He also said, “AI is a technology which will replace thinking that we do in the order of one second. If it takes you one second to think, then today’s AI can replace it and tomorrow it is going to be better, bigger and faster.” Today Intel is working heavily on completely re-architecting memory. We are also investing into a lot of machine-learning-based computing that will enable efficient faster real-time leveraging FPGA. It is not like transition from 2G to 3G and 3G to 4G, 5G is the basket of technology and we need this in India as well. Our tomorrow cannot be later than the tomorrow of Israel, tomorrow of the US or tomorrow of Japan, we want to be on time with our innovation such that it can impact the life of our people. Our goal is to innovate and address the challenges that we are facing. It’s our responsibility to innovate technologies that impacts the life of people. I will also focus on the fact that the world of today is based on solutions, either from one single company or multiple partnerships. Intel is partnering with companies like BMW, TELCO providers and others to develop real solution for real problems. The need of today is the need of the solution which requires collaborations. And I am looking for more innovation more collaborations, and more partnerships, I stands for India and I stands for Innovation!

Keynote 3:

Bill Wuertz, Vice President, Cloud Systems, Seagate Technology

The India team at Seagate Technology is innovating from the scratch to develop cutting-edge technologies for the future. Today, every machine communication is data-driven. This opens the scope for machine learning applications. There is tremendous amount of data available from millions of points and managing it efficiently is the challenge. So, machine to machine learning is not just for travel safety, it’s not just for transaction processing, it is about everything around us. And this is where the Big Shift comes in. If something is changing, then what you do? In 2010, the amount of data generated, and in 2020 after 10 years it is much bigger. That’s where the big shift is happening. If you look at EMC, HP or NetApp they develop storage solutions servers, and there are lot of players also in the same space and who are actively engaged in the development of enterprise infrastructure solutions. If you look at the details back in 2010, the storage market revenue was around 5 billion dollars in term of CAPEX. And in 2016, 6 years later its $20 billion, so the growth is really going up. In India as well as in the rest of the world, storage innovation is very critical for future sustenance of enterprise infrastructure and global growth.
Keynote 4:
Dr. Chi-Foon Chan, President & Co-CEO, Synopsys Inc.

Trust and tangent ecosystem are the key areas in change. Whenever there is change there is opportunity and then I do want to tell you about why we all are excited about India. First, we all are engineers, and this is the area of engineering innovation. I first came to India in 1995 in Bangalore and it was very different and now the India is very different. It is 25-30 times bigger and faster, that is why we call it resurgence of India. India is changing very fast and it is hard to keep up with the ecosystem, partners, and customers. The change is so interesting for semiconductor professionals and that is because AI creates lot of big data. The math was known for long time ago but what is different now is we have very good computing systems, good applications and memory because of big data. But the opportunity for us in the Automotive industry is that the amount of electronics going into the cars and that’s creating a big market for semiconductor and electronics and they have a long application and everything. The electrical vehicle has changed the entire ecosystem. What is the main change in supply-chain? Now looking at the changes that is happening in AI and Automotive – it has changed the focus from mobile to other areas. There is one more thing that is important, that is Security, and Security comes from two sides - one side is data protection, piracy, and everything else, and another side is coming from protection - the supply chain. Every nation is looking at protecting the supply-chain for security reasons. The form of trust is changing as I said that change is the only constant. And the legal system and supply chain is changing form changes just like they want to re-establish.

Fireside Chat:
Pratul Shroff, Founder & CEO, e-infochips and Som Pal Choudhury, Partner, Bharat Fund

Som Pal Choudhury: If you guys recall, e-infochips got acquired by Arrow Electronics. It was one of the largest acquisitions in the ESDM sector, in fact almost for all sectors to the tune of $250-300 million. The exact amount has not been disclosed. e-infochips has been almost 24 years in the making. Pratul started e-infochips way back in 1994, and of all places, it was not in Bangalore it was not in Noida, it was not in Hyderabad, not in Pune, this started up in Ahmedabad. So tell us Pratul, about your journey of starting e-infochips.

Pratul Shroff: I was in the USA and one fine morning I decided to go back to India. Each of one of us has to find his own Mount Everest, something to do, some challenge. You go from 16 to 32 to 64-bit processor, but where do I go with it? What is my ambition? What is my dream? I took the decision. Fundamental drivers where India needs us. Let’s go back and do something there. The dream was that if I do something in Ahmedabad, which was my hometown, that will be great because there is no technology there. I came back in 1987. I started e-infochips in 1994. When you start a services company, you are not going to get any backing.

Som Pal Choudhury: How did you decide that it is going to be a ASIC design services company? Why not software? Why not something else?

Pratul Shroff: Actually, we started with one contract in embedded systems in 1995, that was the start, I had
one customer. And in 1997 the customer disappeared, they went bankrupt. Then I had to decide what to do in life. I have done my design on the chips with schematics, and meanwhile verilog had come along, and the light bulb that went in my mind was that verilog doesn’t require semiconductor physics knowledge. We don’t deal with the transistor level devices, so can I take a bunch of electronic, electrical engineer guys and teach them verilog. So, I hired four engineers who are doing some cellular tower maintenance. One guy is doing industrial controller design, and things like that and I challenged them that look if you do this, your life will be transformed, literally will be transformed, but you have to be patient, you have to work hard, and most important of all, you have to put the money where the mouth is. So, if you truly believe in it, you have to take a pay cut, and literally they took a pay cut of 30% and luckily in 1997, the Bay area was abuzz with optical networking and everybody was looking for verification engineers and we applied, and they got accepted as verification engineers. I wanted to do something for my hometown Ahmedabad where there was no technology. Bangalore at that time was buzzing with technology, though not like today. But Ahmedabad had absolutely no ecosystem at all. So, I thought, let me be a first, forget big for now. So, the decision to be based in Ahmedabad was mainly because of this.

Som Pal Choudhury: You have gone in the last 24 years, from 0 to 1500ish employees, one third of your work is still typically ASIC design services, and the remaining is systems. How did you all scale up? Were there any points of pivot? Were there any specific decisions? How was your journey overall?

Pratul Shroff: We kept investing in technology. I fundamentally believe that if you are good to people and invest in them, they will stay with you. And by the grace of God it all worked out for us. We invested a lot in terms of knowledge and technology skills. We decided to train about 20 people in e-language and they were in high demand. And so, we had high business. About three years ago we partnered with Qualcomm which was only into mobile market. We became their design partner. That’s how we got introduced to Arrow Electronics. And last year the huge acquisition of e-infochips by Arrow Electronics happened. Our core values are customer-first and disciplined execution. So, my advice is ‘Keep at it’. You figure out what your strengths are and keep getting better at it. What matters is what you want in life. Have clarity of thought and relentlessly pursue.

Fireside Chat:

Dasaradha R Gude, CEO, INVECAS and Janakiraman Srinivasan, Founder & Chairman, Nuvepro Technologies

Janakiraman: I understand that you have done more than 10 start-ups and you have contributed in our IESA starting arena, you have an educational institution focused totally on the electronics and semicon area. Even for the visual effects of Bahubali, you were behind it. I want to focus on your current organization Invecas, interesting name, you can throw some light on how you arrived at the name?

Dasaradha Gude: We had the opportunity to start Invecas very quickly. From day 1, it showed that it would grow very fast but what we were worried about was trademark issues. The team includes group of people from IBM, Walmart and the top-notch memory guys in the world. We came up with the name India-California-Walmart startup. That is how Invecas came up.

Janakiraman: What is the size of your organization and revenue?

Dasaradha Gude: We are as of now 1600, within another 3-4 weeks we will be 1800 plus. We just signed a deal with Open Silicon that we will acquire. In terms of revenue we expect to do around 140 plus this year. We are focused on semiconductor.
Janakiraman: In the ESDM space, we have seen so many services organization start small, grow, gets into acquisition, consolidation, growing little larger but finally consumed by some MNC. Do you think your trajectory is similar?

Dasaradha Gude: Anytime I start a company, I plan to exit. 3-5 years is the timeframe. If it is 3 years I am happy, if it is earlier I am much happier. 5 years is the worst case. For Invacas, I was exactly thinking 3 years. Last year, just before 3 years we decided not to sell it. For sure we will go IPO. In 2021, we will go IPO unless somebody gives me too much money.

Janakiraman: As a services company, you are currently more on doing not the T&M kind of services but much more of turn key products, that kind of arena. Is there a possibility for you to move into product arena? In the long term?

Dasaradha Gude: Services is a wrong concept. Services is if you are only supplying the people. Invacas is not in that business. Invacas is building the product which the customer requires. Today we are developing complex products and you will see in the future, many of the chips that we are developing will be purchased by the world-renowned companies. We don’t put our name but develop the chips for other companies.

Janakiraman: One thing that we have talked about at IESA is that one day India will have a fab, it still looks like a distant dream but there are so many opportunities where fabless semiconductors can happen out from India, not specific to your organization. Do you think fabless companies that make complete product and then get stamped on their name and get fabricated elsewhere, do you think there is future for India in that?

Dasaradha Gude: My career started in fab in 1987. The problem with fab is to break even and its not easy. Having fab for India, unless for Defence reasons, there is no need at all. Huge capital is required if anybody wants to start a fabless company. Doing your branded product from India is almost impossible as of now. Doing niche area, developing some component is not a problem. Again, the way we thought of when we started the company was in ecosystem creation. Right from building the people, all the way to delivering to the customer, the customer can be anywhere in the world. Today we develop chips for the number one companies from India. We have talent but unfortunately, we are not getting it matured. People are learning and jumping for money sake and not going all the way to learn the end results. Not many people know the end to end solutions. We are focusing on creating an ecosystem for the Indian market.

Janakiraman: IESA was developed as a platform where people can compete as well as collaborate. There are so many design services companies that are fantastic IPs but in isolation. If some of them can be brought together there will be mega IPs competing at a global standard level, that can happen. How can this collaboration happen?

Dasaradha Gude: I think that is right and India should do it. We can multiple IP vendors, customers, developers. Various people can come together and build a platform in a particular domain. India has opportunity because we have talent and support, but people should not be greedy.

Janakiraman: Another thing patent is another area where we are relatively weak, to trivialize our own ideas. When something happens, we realize we could also have done it. That is another culture we are trying to promote through IESA.
Panel discussion: Growth Opportunity in Fabless Semiconductor Industry

Jaswinder Ahuja, Corporate VP & Managing Director, Cadence Design Systems (India) Pvt. Ltd. (Moderator)

I had attended the Economic Times Global Business Summit, last week, which was attended by the Prime Minister, Central Government employees and many top industry leaders. It was based on the theme of ‘new economy, new rules. India can be a $5 trillion economy by 2025 and potentially a $10 trillion economy by 2030. The key question that emerged was ‘what it takes to realize this opportunity?’ Three themes emerged out of this conversation:

1. India should lead in terms of technology.
2. We have the demographic dividend in terms of working age population, but we have to invest heavily in skilling them, in terms of right kind of skills depending on which sector you want to target them towards Innovation and entrepreneurship within the overall Indian economy, across several sectors.
3. Successful Indian entrepreneurs opined that we have to be careful that we don’t end up becoming a ‘digital colony of the west’. Global CEOs with large presence in India and successful Indian entrepreneurs believe that India can be the breeding ground for solutions for the next 6 billion people in the world. Most companies today are targeting the needs of the top 2 billion people in the world of a certain economic strata. But there are another 6 billion people whose needs are not being met. India could be the test ground for that.

This statement was first made by Dara Khosrowshahi, the CEO of Uber. He said that we are innovating heavily in India. We cannot think of the semiconductor industry and the fabless ecosystem in isolation. Let us dive into the conversation by taking up fabless. Within the fabless models, where does the real opportunity lie, Where is the real opportunity and which are the product areas where we see real opportunities?

Samir Patel, CEO, Sankalp Semiconductor

Vertical opportunities in the areas of education, transportation is there but we should also look at horizontal opportunities. Chips, going forward will not be made the way they were made in the past. In the time of ASSPs a standard product was made, those days are gone. We must focus on a vertical market and then offer a full solution. But at the same time, you cannot do all the things to get the chip made, designed, fabricated, assembled and tested. Horizontal opportunities exist. You can be a chip designing company. The fabless industry structure will evolve in the future years. The chip specifications and the chip makers need not be the same. Chip specifiers may be the system companies. They themselves may keep the control of making the chips, they are known to the industry as chip company. It is important to focus on what all we do not have rather than focusing on what we have if we want to ensure success. Things that you need to have to be a successful fabless company are digital expertise, analogue expertise, logical system awareness, physical system awareness and economic access, economic access to IP.
Carl Anderson, IBM Fellow, STG Processor Design, IBM Global Markets, Industrial Sector Global Staff, IBM

I have a little different view. I think what you must do for the fabless is ensure how you go up the stack, how you can make the software add more value so that it is very consumable by your customer because if you give something to your customer which requires significant amount of work then they would go somewhere else. You want to keep some of the value that you give out of adding the firmware or the applications. You must think not just about the fabless chip but about how it is going to be used and what further value can be generated in the firmware and applications.

Hemant Kanakia, CEO, Kanakia Ventures

When you talk of the global market and trends, you also must talk about where opportunity does not lie for startups to focus. The old platforms, the cell phones and the laptops are gone. If a startup is attacking those market, then it will not get fund. There are new areas and new platforms coming up, the smart cameras, the drones, robots, smart speakers, multi sensors, are all new areas. We must focus on understanding where the market is moving. We need innovation which is addressing not the data center, markets and servers have been cornered by big companies, startups are not focusing on them. We must go for low power, edge computing, AI etc. There are opportunities in wearables, medical devices, consumer grid like Agrigrid, new generation of retail that is coming up. A lot of development is happening in sensors, the fire alarms, fire systems etc.

As far as India specific opportunity is concerned, the next two boundaries that will be broken in the world are the religious and the nationalist boundaries. When we talk of India specific, we should talk more about that which is relevant to India but also maybe relevant to certain parts of the world. There are opportunities in the next 6 billion people market and these opportunities are easier to grab because all that you must do is look at the existing product and how you can make it cheaper and better and when to service it. People who are going to use it are not going to be sophisticated users of the technology. I believe India to be the next big hub for fabless semiconductor eco system. The SFAL programme is a very good idea. Incubation Centre and Venture Fund for the Hardware Industry are important to bootstrap fabless ecosystem in India.
Prem Kumar Arora, Director of Product Marketing and Business Analytics, Microsemi

With regards to market opportunities, there are lot of disruptive technologies which are emerging today. I would like to take up the example of the automotive industry, an industry that has been in existence for over 100 years is at a disruptive milestone now. The whole car is transformed, the way communication happens in the car, the way the drivetrain happens in the engine, the way the car is likely to start driving us rather than us driving the car. It is one potential area which has got a tremendous opportunity for entrepreneurs to participate in that ecosystem. Let me give an example of the power generation sector. We have a goal in India to transform power generation from fossil fuels to sustainable sources. The way power is transmitted from solar to batteries is very similar to an electric car. The automotive industry has tremendous potential. We must look at cybersecurity at a broad and aggressive manner. The department of Defence and Cybersecurity has laid down certain ground rules for securing the critical infrastructure. One of it is secure communication platform and secure processor platform. These two are again potential areas.

Hemant Mallapur, IESA Fabless Start-up Core Member & Co-founder & VP Engineering, Saankhya Labs

Fabless is not in India itself. What we have seen in Saankhya, you need to build a final solution that addresses the problem. You can choose a developing world problem such as self-driving cars, sensors or you could look at the problems which are around us. If we look at what the problem is there in India. One of the major problem is internet connectivity, telecom infrastructure for the country, we also have a lot of peculiar problems such as in terms of SATCOM. India does not have a developed SATCOM ecosystem because it is all excessively slow. All of these are opportunities that can be addressed but they would be directly related to a chip. We need to look at the chip as a part of the sub system. It is no longer at the center of the solutions, it is a part of the solutions. Just like in the earlier era of engines and motors chemical existence, initially engines were at the heart, we don’t now look at the engine itself but the overall solution. What we need to do to bootstrap fabless ecosystem in India – one thing is for the Government to avoid doing market discontinuity as it takes away the opportunity for Indian companies. Example The manufacturing of STB where in China took over the opportunity of STB digitization even before Indian manufacturers could ramp up their manufacturing capacities. Similarly, big companies need to realise the value of fabless as a tool.
Panel discussion: Emergence of Electric Vehicles

Ashok Chandak, Senior Director, Global Sales & Marketing, NXP Semiconductors (Moderator)

Let’s take a high-level view on what is happening in the country. Lots of two-wheeler, passenger vehicles, three-wheeler manufactured in the country. Where is the source of pollution in the country? Half of the pollution is from transportation. There are several mega drives happening in the automotive perspective and there are some challenges that we need to address with regards to electrification. Affordability is a challenge. Today EV vehicles are much more expensive than the conventional ones. Charging stations: While driving the car if battery is down what can be done? Charging time: If you are on the road, you do not have all the time to dedicate to charging, unlike if you are at home. There are several government initiatives to boost the Electric Vehicles industry in India. 10 years ago, the cost of electronics was only 20% of the vehicle innovation. Today, more than 90% of the innovation of the vehicle is done by electronics and software. And that’s where the opportunities are for all of us. When you jump into the EV segment, it is 100% electronics innovation probably. It is going to be electronics and software that will drive innovations in EVs.

Niranjan Pol, IESA Automotive CIG Co-Chair

In an ICE mode, it is very difficult to get into this whole business because the OEMs will only be giving this business to a tier I or tier II company and so for a smaller start-up, this model will be very difficult to set up. But it is also true that such a huge market disruption has also opened opportunities into this business. For those of us working in the semiconductor industry, we need to measure currents, especially for an EV. The most common method to measure current is the SMART haul effect. But this is not a very reliable method because we have to derive or guess the measure. Now in the macro level, we can come up with current measurement systems that are more reliable. We can do innovations and get into this. As far as EV is concerned there are lot of issues in the different model innovators are coming up with but there hasn’t been a big breakthrough yet. So, people are yet to crack the solutions to the problems affecting the EV market. Therefore, there is a huge opportunity for start-ups to take advantage of this disruption. Additionally, there is a huge opportunity for companies that are into power electronics. EV is a disruptive technology and India has equal opportunity available compared to the rest of the world.
Rupesh Kumar, Co-Founder, EVI Technologies

Disruptions lead to opportunities for start-ups. We started our venture about 9 months ago and initially we got some orders. Currently we are seeing many well-established automotive companies coming to us to work with us. So, it’s a big opportunity for a start-up like us. In the EV segment, maximum components are electronics, so a lot of engineers can find job opportunities in this industry as well. Big companies are offering to tie up with young entrepreneurs. So, these disruptions will help bring new job opportunities and getting good funding too.

Uday Pisute, Director & Product Marketing, Arrow Electronics

First of all, it is a big disruption. If you really look at EV, it is a big buzzword. There is good opportunity for India. In the last few years, India has focused on installing renewable energy. We are currently at 62 data watts of renewable energy. We have enough and more energy as far as charging infrastructure is concerned. If you take any typical automotive currently, with a gasoline engine, there are 150000 rotating parts. Now if you take an EV, there will be only 5 or maximum 10 rotating parts. So, there’s going to be a huge change in the technology. Mechanically driven vehicles will be getting into electronically driven ones. Now if you see the start of the automotive industry, Europeans initiated and American joined them. In India, there are several blocks to prosper in the EV domain. So, what it means? It has got hardware and software. We as Indians, need huge ecosystems of hardware designing. There are 1000 start-up in Bangalore itself who are actually into hardware designing and we have a 30 years’ history of software development. So, you can see that it is a huge opportunity for us wherein we can start from scratch and become leaders in this industry.

Panel discussion: Semiconductors - Global Drivers, India Opportunities

Ajit Manocha, President & CEO, SEMI (Moderator)

When we do anything the key questions are why to do? When to do? How to do? For India for enabling the semiconductor mission, why to do is clear. When is also very clear. The time is now to do it. It is not clear on how to do it. I would like to offer my help in this context. India has a mission to become a semiconductor powerhouse. SEMI has been in existence for 48 years. SEMI has been setting standards for this industry since inception. We have spent time with the world leaders to drive the public private policies to promote free trade, promote global interactions in the industry, to promote government’s ambition to invest in technology, to promote immigration policies so that talent can flow around the
world, competitive tax policies across countries so that no country is at a disadvantaged position etc. Market intelligence will provide lot of data. We SEMI has been driving few verticals in 2018 - namely IoT. IoT is a multitrillion dollar industry. There is so much you can participate in IoT. There will be 50 billion connected devices by 2020. The world population is 7 billion, out of which only three and a half billion relates to the internet and a huge potential lies there. The fabless chips are expensive but do not get disheartened by it, this market has great potential. Smart factory, smart machines, industry IoT, smart auto, this is real. Semi-autonomous car will happen in the next 10 years if not fully autonomous cars. Cars will be very different from what they are today. In 1990s, 50, 20 chips in cars were supplied and today it is 10,000 chips, by year 2025, one of the big automakers in Europe, expect 75000 chips in cars, lot of potential for India. Smart data, Ms. Rai from Intel said it very correctly that data is the new currency. World Economic Forum panel discussions talked about 129 countries are showing GDP growth which is unprecedented. The GDP growth is attributed to the heavy involvement in innovation and technology and AI was one technology mentioned multiple times. World is moving very fast and it is time for us to go fast in India. The potential is huge in India. The trend in India, automotive, IoT, I have been involved in this industry for 37 years, two decades ago China had shown similar trend, they have made progress in several areas. The question for us is, is this the time for doing it? That is the message I want to take forward. 2017 has been a great year for semiconductor industry. When we started in this industry there would be a ‘feast or ‘famine’. Either we had double digit growth for 1 year and then for two years double digit decline. Average growth was high single digit for the year and industry grew from 20-40 billion in late 70s to 420 billion today but last year we grew from 22%, the best ever year. If we look at history, we started with computer centers, we had desktops. Today computer centers have been translated into data centers but in between we moved from computer centers to desktops to laptops, telephones to smartphones to tablets but there was an era for 3, 4 years that help the industry to grow. Today is the era of 15 disruptions going on at the same time which is fueling the growth. There are about 20 fabs in construction in China today. China in 2014 announced close to $250 billion investment in the semiconductor industry. Disruptions in semiconductors is foundation for growth. China is strategically focusing on the right things. Because of the Chinese investment, during the election of September 2016, called PCAST, the objective of the report was if China invests $250 billion across the world to achieve this semiconductor ambition, then what would it mean for US? China has imported talent from Taiwan which has created a problem in Taiwan. In leading edge technologies, they lack talent and again there is IP. It should be China and India together and not China versus India. The time has come for us to execute. We need to take it further. We need to put India on fast track. Population is an asset, we have the asset we have the market. The government and Indian industries should pull us, people who are willing to help India, make India more successful. India has lot of ingredients for success but what is missing is the global perspective and that is where SEMI can provide you that in enabling semiconductor mission for India.

Tetsuro Higashi, Corp. Advisor, Corp. Director, Tokyo Electron Limited; Semiconductor Equipment and Materials International; Director Emeritus, SEMI, Advisor, Semiconductor Equipment Association of Japan

It is my honor to share the brilliant future of the semiconductor industry in this event. Tokyo Electron is one of the global suppliers of semiconductors. This year we have achieved 10 billion dollar this year. IoT and big data are the trending things and the number of connected things is increasing. Data will change society for the next 100 years. It is all semiconductors, processors and storage. IoT and AI era is bright. Industry is still at a budding stage. Industry will grow driven by innovations. What will drive the semiconductor market? There are three I’s that will drive the market.

1. Interface between real world and IT network - Semiconductors will bring us new experiences such as virtual reality.

2. Intelligence - Realize high security and low latency.
3. Infrastructure for data communication and storage - Enormous volume of Infrastructure will be used in cloud computing, 5G networks, and Data Centres

Virtual reality started in gaming console but is now in industrial use as well. Smart speakers, voice interface AI assistance. It seems the era where human beings and AI live together has arrived. Self-driving cars will drive semiconductor demand. The success of the self-driving market would depend on how innovative AI is created. Smart factory, using machine data connected by sensors, intelligence of semiconductor realizes the high productivity. We are focused on individual performance of devices. Semiconductor devices have achieved great performance. Neomorphic device is a promising device enhancing human capability. Google, Amazon, Facebook, Apple are now giving a lot of attention to semiconductor devices. They have realized that the future of AI depends on the creation of new semiconductor devices. India will be able to contribute to the innovative creation of semiconductors of the next century. India has a high economic growth rate and is blessed with a high population and a young workforce. India has high global competitiveness as per the Global Competitiveness Report published by the World Economic Forum. This is not enough for semiconductor manufacturing. It requires basic infrastructure. They have to improve the quality of infrastructure for semiconductor manufacturing with the strong support of the government.

Krishnan Shrinivasan, Managing Director, Lam Research (India) Pvt. Ltd.

Sometimes people who visit India find more opportunity here than people who live here. I will present macroeconomic information on semiconductor industry with some commentary on opportunity in India in semiconductor space. I will focus on the portion of electronics and economics. Lam Research is the second largest semiconductor capital equipment company in the world. Lam Research’s revenue in 2017 is $10 billion. Unfortunately, we do not manufacture anything in India, however a large amount of investment from Lam research is flowing into India primarily in the areas of R&D and engineering. India occupies a central portion of Lam’s geographic strategy. We prefer to see the world in terms of the semiconductor or electronics food chain. Obviously, we sit at the bottom of the food chain, we are in the fabrication equipment industry. The view from the top is panoramic but view from the bottom of the food chain is quite illuminating. The industry itself is as large as the Indian economy and an increasing portion of that is captured in the semiconductor space. One quarter, about 20 percent of the electronics industry value emanates from the semiconductor industry. We capture a very small volume of it. Traditionally the semiconductor industry relied on personal computing and then the internet and then mobile computing or mobile telephony but today with AI, IoT, cloud computing, autonomous automobiles, there are multiple vectors of growth. The opportunities for growth continue to be exciting in this industry. Unfortunately, India does not participate in the semiconductor industry and the question that we must ask ourselves today, when do we start, what do we do about it, how do we go about doing it? With the kind of technical prowess and capabilities we have in India we should participate in this exciting and innovative industry. That is something I would like to put in the table to think about. This industry applies the widest range of technical and non-technical talent. We have people from the infrastructure level it employs people all the way to people who manipulate atomic level materials. India is one of those few countries in the world that graduates a significant percentage of its college going talent into this wide spectrum of technical field. We are missing an opportunity here by not employing them appropriately.

The growth in equipment and semiconductor industry is driven by the diversity of growth factors such as AI, virtual reality, augmented reality. Question is what portion of that growth can be captured here in India. When would it be appropriate to jump in? What steps we should take to capture this growth? The existence of the semiconductor industry in India is desired even for the sustained growth of the fabless ecosystem. From our perspective, at the top of the macroeconomic food chain, sustained coordinated growth in the national economies of various countries and off course the highlighted growth of India and China. The rapid growth
in China and India, 6, 6.5 % GDP growth rate, is driving the increased demand for electronics not only in the traditional market of personal computing and smart phones but also in some of the newer markets. This is resulting in 5-6% CAGR growth rate in electronics industry. The semiconductor market itself, due to increased digitization of everyday life, the increased adoption of semiconductor component in electronics, is growing faster than the electronics industry, highest single digit CAGR growth rate in semiconductor shipments is being seen. We have 10-15% CAGR growth rate. In terms of the industry segments that we serve, memory is growing the fastest with the adoption of solid state memory in laptops, computers, need for rental storage with all the data pouring in from big data area and analytics is driving a need for memory. The rapid growth in the semiconductor and semiconductor equipment industry is driving the market. In addition to all of the end market growth, there are some exciting technological inflexions that we keep a track of. They are driving a large change in how we fabricate the semiconductors, technology of semiconductors. People in Lam and other material manufacturers are increasingly reaching out to Indian talent because the rapid pace of this technological change is creating a voracious demand for technical talent driving a lot of investment in India which is creating on the downstream side an ecosystem that can now be able to sustain semiconductor manufacturing. Lam invests 12-15% of their revenue in R&D creating a demand for talent.

Dr. Fabio Pieralisi, Project Manager R&D, Applied Materials Inc.

Today I will talk about applications on flexible substances such as wafers. Short introduction on prime materials, we will discuss trends and applications for flexible substances, architectures that are enabling the applications. We have engineering capabilities, we develop the tools, produce the tools. We are developing flexible displays. Intelligent packaging. Prime materials are covering all the materials required to develop the application, inductive heating. Let us start with smart wear, industry leader. It exploits technology, enable higher target utilization. It is a modular system. Maybe a couple of application touch panel in steel, other applications for flexible display. Optical filters. This can be applied in automotive architectures. Let me introduce CVD architecture. A new architecture/platform is developed for advanced technology. Prime materials contribute towards flexible electronics.

Panel discussion: Opportunity and Challenges for Startups/Entrepreneur in Electronics Industry

Dr. Satya Gupta, CEO, SenZopt (Moderator)

Entrepreneurs and start-ups try to provide solutions as offerings. The key enabler is coming from hardware. The biggest nail in the whole space is the component ecosystem. PCB you will get, induction moulding you will get, but can you get the components at the right time, at the right cost from a single supplier? There are two models in the industry. You can go to distributors and get it on your own or give it to your EMS guy to buy and build it for you. In my opinion, that is the weakest link in making an electronic product. So, we neither get the components in time, nor cost or quality. Because if you are not able to do it on time you will go to a local vendor and get it from there. What can you do? You called up your distributor who said he cannot deliver before 20 weeks and charged a hefty price. So, component ecosystem is the weakest
link in the ESDM industry in India. We are trying to build ESDM clusters across the country to strengthen the ecosystem.

Sanjay Jain, CIIE, IIM-Ahmedabad and Partner, Bharat Fund

There is a massive change in the way we live our lives today that we did 20 years ago. The TAM is large, and this is where entrepreneurs come in. As a business, if your focus is on building a great product and then you don’t have a way to sell it, you must look at channels and partnerships to do your sales. There are ways to solve the problem without saying that you must build the sales function inside. But even to find a sales partner who believe in the product, you will have to believe in your product. So, I don’t think of this as an association issue, but I do think that as an entrepreneur you have to find the most appropriate path. Path means riding on a systems integrator of some kind or some other mechanism. It is not that you can automatically turn into a good salesman overnight. Sales is an essential component of success. There is no point arguing over who has to sell and how. Instead you have to find the right channels to do it.

Bhaktha Keshavachar, Founder & CTO, Ezetap

A pure hardware play is difficult to sustain. We need to deliver a service and not just a hardware. For example, Hardware is an enabler, but we deliver the service of ‘collecting payments’. Challenges: Investors don’t like hardware business, hardware business is inventory hungry, barriers of entry for software is low that hardware. Tolerance for risk is low in India. To be an entrepreneur you have to be crazy. The behavioral change toward becoming an entrepreneur is very welcoming. College graduates instead of applying for jobs are trying to start something on their own. This is very hopeful. To make your business successful, you must have a robust sales team to sell what you are building. You have to invest in sales and marketing to make your business a profitable venture.

Dr. Vivek Raghavan, iSPIRT

We must make for India. If we want to think of electronic products, we must make for India and then see how it works for the rest of the world. We should not try to copy the products that work in the rest of the world, we must understand the nature of India and make for India. If we are talking about products that are hardware enabled, I think it is important that there is an opportunity to make different products and with different functionalities and at different price points, made for India. The second important thing is – solution first, hardware is an enabler and not the focus. It should not be that I am getting into the business because there is hardware there. We are getting into the business because it is solving a problem. We
must be solutions first. One of the realities of hardware is inventory cost and all these things and you must, if you want to be a company with longevity, you must basically go through generations, you must improve things while remaining the same. It is more difficult to do in hardware than in software. Thus, the architectural design of what you are doing has to be designed and that is many times tends to be a software construct as to how you cannot just be successful one time but successful through generations of your product. Other things, we realize most of the profit is at the highest level. The person who owns the software, owns the brand are making the maximum profit from the system. So, you need to up level yourself. You can be a solution at any level. The higher the level you keep your solution, the larger the scope, larger the share of the marketplace. If you can create a unique defensible IP at the lowest level and hold onto it, that is possible. But I have not actually seen any company in India do it. Maybe there are examples, at any level, at the solution level, people are maximizing the profit. The solution can be a software and can be an open source platform and it is actually a way to strengthen your depth on open source platform that has wide applicability in the globe over, you can actually be competitive in the global market. I will restrict my comment to this as of now and can go into the discussion.

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Vinay Patil, Director, NGX

The cost of manufacturing in India is very high. Electronics is a complex multidisciplinary business. So many dots have to be joined. A substantial ecosystem is crucial and here startups have a big role to play. Unless ecosystems are plugged in SME growth cannot happen in India, but these changes are already happening and there is a lot of scope in the country for automation solutions for entrepreneurs. ESDM Cluster started in Hubli. Right from manufacturing facilities, testing facilities, ID design everything is done there. Initiative by Deshpande foundation and Karnataka Govt. Such initiative will encourage startups in other cities across the country and build a stronger ecosystem. The lead time of 20 weeks is a worldwide phenomenon, but it is even more delayed in India. However, the good thing is that this situation is changing fast. Companies like ARROW, Microchip, NXP and a lot of other big players are now taking a very positive wave towards India. They are being supportive about making technology available here.

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Making Electronics Manufacturing competitive through Clusters/CFCs

Sh. BV Naidu, CEO, Sagitaur Ventures (Moderator)

While we take lot of credit promoting the IT industry and has grown much bigger in the last 20 years, promoting electronics has become difficult task for the Indian government and all other stakeholders. I have seen this within the government which has been promoting the IT industry since 91 and where it is now, and I also happen to be the chairman of the National Electrinics(NPE) policy when it was last created in 2012, the policy was very well drafted, and the policy is one of the best policies that you see. However even the best policies may not be successful because of the implementation framework. Implementation is a major challenge and so we must fine tune our implementation mechanism to improve upon our efficiency and effectiveness to attract the electronic investment. The country has been trying to promote the clusters for the last many years and under the National Electronics policy there is a policy for the EMCs and then there is sufficient funding for the EMCs. There are more than 50 EMC clusters that have been applied for government funding,
out of which 26 EMCs were approved. Out of these 26, overall investment into the EMCs is estimated to be 4800 crores and government support itself is 1200 crores. I don’t think any policy of the government of India in the past started with such a big number. The electronic per say has a huge budget outlay but we need to improve upon how effectively we can implement this. When such a large outlay is involved, state government has responsibilities. The states have responded very well, and they have a separate budget outlay to support the electronics industry. They are competing with each other to attract investment into the country but still we are nowhere. There are few good things that have happened. In the general EMS space, we are ok, attracting few investments in EMS space, mobile manufacturing and assembly. We are no away in terms of hi-tech manufacturing. When we are talking about the hi-tech manufacturing do we have display manufacturing in India, battery manufacturing in India, not yet! Do we have sensor manufacturing in India, not yet? These are the high value manufacturing that we must catch up. The government, the stakeholders and state governments should effectively work together to make sure that we achieve these things in the next few years. The success of the IT industry has happened because everybody got synchronized, the state, central government and the industry. Association likes the NASSCOM and everybody was synchronized. Can we bring the same level of synchronization in the electronics industry?

Sh. Akshay Patel, Head – West & South, IL & FS Cluster Development Initiative Limited

An organization that is very active in cluster development is Cluster Development Initiative Limited. Our focus is mainly to create an ecosystem where there is manufacturing competitiveness. The idea is to leverage $600 million brands for various clusters. We have enabled job creation of more than a million people. We have setup clusters in Maharashtra, Rajasthan, Uttar Pradesh, Karnataka and Jammu and Kashmir also. When we are looking to get investments, we have to understand that it will come when there is competitiveness in the manufacturing sector. So, the central as well as the State Govts, are creating conditions where the ESDM industry can operate competitively. And then they come out with various policies for cluster development. Govt tries to provide land, stable ecosystems, infrastructure, policies which are actually focused on reducing the cost of factory setup. Lot of investments are coming in the electronics sector. We need to ensure that the existing capabilities are utilized. When we are doing cluster development, we can take cluster as a sector. So, like the State govt has a policy for electronics: Kerala, AP, Chhattisgarh all have policies for clusters because they want the electronics sector to grow in the state for job creation. So, you need to connect the various aspects of the cluster and ensure that these existing facilities are implemented in the clusters in a tailor-made manner. People with excess capacity may have some difficulty in operating due to various factors. On the other hand, companies which are growing and have very clear marketing plan can connect the former company to the latter for a successful cluster growth.
Sh. Bhaskar Reddy, CEO-Electronics Promotion, APEITA, Govt. of Andhra Pradesh

I am proud to say that we have one of the best clusters in India. What we feel is any investment should be based on the financial model and not on the incentive. Incentives may help an entrepreneur to start but it will not help to continue in the industry. For an IT entrepreneur, it is easy to enter and exit a set up in a national state because if things don’t work out well, they can pick their assets and leave. But for manufacturing it is not like that. Entry may be easy, but exit is very difficult. The success of the cluster is purely based on the vision. Some more clusters are being planned across the country. In Vizag, the focus will be on medical electronics. Belur will be most mobile and consumer electronics, Tirupathi will also be mobile and consumer electronics, Ananthapur will have an PCB cluster. The day we announced the PCB cluster plan, two companies showed interest. Our administration led by our CM improved our art of implementation. Product-wise cluster strategy and effective implementation will pave the way for success in ESDM manufacturing.

Sh. Keerthi Laal Kala, Head - Investment Promotion, CHiPS, Govt. of Chhattisgarh

Chhattisgarh is an oxymoron when you think of IT and electronics. But the surprising fact that I have learnt in the past one and a half year in Chhattisgarh is that almost every third or fourth person in Noida, Mumbai, Pune or any other region if not specifically Chhattisgarh but Andhra, Orissa, Bihar etc. has some connection with Chhattisgarh. So, the approach that we are taking is to bring the people back to start shops and industries in Chhattisgarh, the way Taiwan and China has grown, expats coming and setting up. What can India as a country do to serve the global market and within that what market does Chhattisgarh have? The approach that we are taking is first look at India as a whole. What can India do for the global market? Within that what market does Chhattisgarh have? What are we good at? We are good at producing power and steel and bunch of other core things. As we speak there is a huge amount of percolation of both IT and electronics into all these industries. Why can’t we work for this companies as a state to open up such problems in front of SMEs, start-ups and enterprises to create solutions and serve them? This is the thought we have been playing around during the past 14 months and in the last 3-4 months we have realized that we are trying to do something different from everybody else in that we are interested in investing on future opportunities and not that which is existing today and why can’t we make Chhattisgarh a place where we are growing industries not just to serve the domestic market but what can we do to make sure that the products and solutions that are coming out of the companies operating in the state actually can go global. Two components of that are the existing cluster that is there is Chhattisgarh are very consciously setting up a chain of testing facilities working with different partners starting from package level to sub system level. We are not trying to compete but this allows us to cooperate with Bangalore, UP, Andhra, Kerala, wherever things are happening to plug the gap rather than competing with them for creating a space in which they are already good or are encompassed.
Dr. Jayasankar Prasad, Special Officer, Hardware Mission, Govt. of Kerala

We have made a few attempts at EMCs. I will be talking about a few of them. We have got few players both in the public sector such as Keltron, private players such as SFO Technologies, Delphis, FCIOEs, Vguards doing well. Kerala has been well known for their manpower, digital literacy and for exporting manpower. There are a few scientific and research organizations that we have not leveraged. One is the ISRO Centre, called Vikram Sarabhai Space Center, Sri Chitra which is into medical electronics, they have an incubator center for development of advanced computing which has got a national mission on power electronics in Trivandrum and Rajiv Gandhi Center for Bioinformatics and a host of other such scientific organizations. If you look at their websites you will see 100 of technologies ready for transfer but none of them have gone commercial, right from VSCC onwards. Talking about common facility center, lot of CFCs have come in with the private sector like the RayHans which part of SFO. We have set up couple of MIT prototyping labs called as fab labs and taken it back to the colleges. That is one of the reasons that the maker movement has picked up well. We need to follow up with industry grade tool rooms. That’s one of the areas we are working on now. Incubation has been going well. Started off with IT but with maker thing happening, lot of hardware start-ups are coming up. Host of government players and a number of agencies come into play. Keltron is a brand to reckon with in early 80s but after that it had gone down. Talking about the manufacturing clusters, I was personally involved in the application of the Kakanad EMC, applied for a EMC and got a permission. People come and ask me what do I benefit by sitting inside an EMC? Earlier it was you had a benefit of applying for a MSEPs if you are in an EMC. But now you can get it anywhere in India so what is the purpose of an EMC? Taking part of equity in running the company. We need to relook at whether it serves the purpose very much. Our EMC at Kakanad has started moving though. There is a focused SEZ by the NEST group which is a private entity and are ready to function. Another 100-acre campus is being built.

Sh. Sanjeev Gupta, MD & CEO, ‘Lahari’ - Advanced Electronics Testing Facility

Market needs right testing product to go, the capability of testing changes because standards keep on changing. How you bring the advanced level of testing capability in India to make our local companies be global. That is the aim of setting up this advanced testing electronic facility. The cluster which has been there now, is not a real estate for different parts. It’s a small unit that caters to all the bigger parts to how you can take your product to the domestic and the global market. Let me take you to ‘Lahari’-a Sanskrit word which means a big wave. A big wave of advanced technologies for the growth of the local industries and encourage new investments and innovations in products and designs. Government of India, Government of Karnataka as well as the private industry players come together to make it happen. I would take the opportunity to say that Government of India in the policy has seen the vision of how to boost the manufacturing and Government of Karnataka with their spirit of commitment towards the electronics industry has shown the path from not just thinking but implementing it, allocating land etc. What does Lahari actually stand for? If you have a facility that provides end to end services which means you a) bring your product into the testing lab, you need a certification, we provide, or EMC, environmental, safety, all distinct capabilities which is available b) you can debug it, you can take out your product go back to your own labs and come back again or provide you a space with all tools and with capabilities to debug and solve it and you go for re testing c) there will be some entrepreneurs with new product design that needs to be plugged with some new thinking which can
bring that capability in-house and provide that capability itself. Lastly there is the skilling part, there will be high advanced technology skilling to the domestic industry members. If that can be brought together then it completes the end-to-end manufacturing industry. That is what the Lahari stands for. Private players have also started participating. It is a facility for members to join, any manufacturing industry from Tamil Nadu, Andhra Pradesh, Kerala apart from Karnataka can also be a member of this cluster. Being a member gives you certain privileges in terms of pricing. Today the foremost challenge we face is if I have to get my equipment tested I have to wait six months in line to get my product tested. The cost of testing is also very high. Then if I go for re-testing it takes so much time. The market is changing so fast that the product launch becomes late and we are losing the market space. These problems can be solved because by being a member you will get a privilege on your time slots, pricing and solutions. It is open invitation to all of you to leverage this advanced testing facility, Lahari is not just for testing but also for value added services that we bring in to the table and be a part of this initiative to boost it and make the local industry global.

IESA Technovation Awards 2017

Rajeev Khushu, Director – Corporate Affairs, Texas Instruments

Texas Instruments has been associated with Innovation for decades, I think we are almost 85 years old company. I don’t know how many of you know the semiconductor IC was invented by a person name Jack Kilby, who was a fresh joinee at Dallas. At that time most of the people went for vacation but this guy decided to stay back and tinker around, That’s how IC was born. Back in 1958, Jack Kilby went on to win the Nobel Prize for that, but then as you can see the invention of wheel lead to the revolution, but I can tell you all the technology revolution which you are seeing today would not be possible if that thing would not be invented at that time. Because at that time most of the electronics was basically dominated by vacuum tubes. So, Texas Instruments is enabling basically a future of technology by driving bleeding innovation whether it is DPL millimeter radar or high precision analog devices I think all our devices cut across multiple industries whether it is automotive, industrial and other technologies like IoT and Artificial Intelligence. In India TI is present for more than 34 years and we were the first one to startup the global development center in India and I am happy to tell that more than thousand patents have come out of our Bangalore innovation center. We are contributing significantly to the IP creations for Texas Instruments globally. If you see the global innovation map, it’s changing, it’s no longer dominated by countries like Europe, US and Japan, some of the new countries like India, China and Brazil are also making huge enrolls into it. For eg. India is the top five nations in the number of startups, but fact remains that more than 80 to 90% of the startup fails and many reasons for that is probably due to lack of infrastructure, ecosystem and funds and many reasons for that. That’s why the state and central governments as well as industrial at large have to basically come up and act as a catalyst to help these startups. We have run a Pan India Innovation challenge in 2016 where almost 900 universities and close to 15500 engineering students participated. We together with Government of India “MyGov” and Department of Science and Technology, picked up some of the brightest start-ups. We are tapping the make in India as well as entrepreneur skills of the country. We also have subsystem industrial design team and other automotive team here, where we actually make subsystem designs. We are pretty sure that we are in for really bright future and I really take this opportunity to congratulate all the winners and wish you all the best.
Guest of Honor

Sh. Ram Mohan Mishra, IAS, Additional Secretary & Development Commissioner, MSME

It is a privilege to be here for many reasons. The entire process of Technovation is so important, critical for all of us to imbibe this entire spirit and culture. We all remember Charles Darwin, when he said that “It’s not the strongest or the most robust who’s going to survive and dominate the planet, it is those who have the resilience and capacity to change with the change who do well”. So, do we have a choice not to innovate, not to change? There’s no choice. That being the context, I must compliment all of you to be part of this Innovation, Technovation. Congrats to all those who won the awards and those who participated as participation is itself an award. This process of innovation & awards in semiconductor is important & strategically significant because it’s a cost cutting innovation. It not only does well for itself, but it has implications for the industry. Any changes here affect the rest of the industry. The level in 2012, the industry size was about 69-70 million dollars. Now we’re talking about 400 billion dollars in 2022. This being so, when business is being done there are two dominating factors, innate urge to do profit for themselves and for the human beings. We’ve heard about the Monk who sold the Ferrari. A ‘U’ turn arrives where the shift is turned towards giving and this is one segment i.e. the electronics & semiconductor industry where whatever we give has a huge multiplier effect in innumerable ways which impacts life in various sections of society (e-governance, automobile etc.) A small nano change here has huge implications on society. So, my compliments to you ladies & gentlemen for being part of this. We heard about creating an ecosystem that’s conducive, supportive for this kind of Innovation & Technovation to flourish. Its imp because business is like the journey of a seed becoming a tree especially for the startups. It happens in the minds of those who has the guts to say, “I’m here to sign up and offer this product and services which is going to change lives and help people”. All business is there to solve something. So, when a dream happens, just like a seed needs humidity, sunlight, nutrients & many other things, this dream also needs support atmosphere. Recently I was in Los Angeles for a Clean Tech Conference where the panelist was talking about the Valley of Death. And it so happens that a large number of cases where this dream happens, and people are starting the journey but then a point comes where the journey faces turbulence. It’s not disruptive or troublesome but just a shaking.

Many a time, my experience with businesses is that entrepreneurs don’t need much physical support. They just need assurance, comfort, some hand holding, advice from others, that its just a turbulence that’s going to pass. So, those of who have gone through the turbulence and done well they have an important role to play. Not to give a physical money, capital or anything else but to tell that I went through it and most of the time in our experience, it just passes away. This is what an angel capital is. An angel is one who comes and says all this will pass and be sorted out. And this where we have the privilege of the presence of our Honorable Minister, we all know AP is a pioneering state, a leader in terms of innovation in governance & IT etc. On our part in Central Govt also, we have many things going onboard to create that ecosystem which are supportive. There are several programs like Start-up India, Skill India, Invest India. There are so many pieces of the puzzle that have been rolled out and we are now putting all these together for a comprehensive business ecosystem, bring those gap fillers where those small things are present.
Chief Guest:

Sh. Nara Lokesh, Hon’ble Minister of IT, Rural Devpt, Govt. of Andhra Pradesh

I represent the state of AP, the Panchayat Raj Rural Development & IT Minister of AP. It’s very rare for Rural Development & IT to come under the same Ministry & that sort of gives you the vision of our Honorable CM, Mr. Chandra Babu Naidu. AP is a residual state, a much smaller state. We’ve been bifurcated in 2014. We today have the lowest per capita income in South India. Karnataka is at Rs.1,58,000 & AP is at Rs.1,25,000.

Our CM, Chandra Babu Naidu’s vision for us is to be among the top 3 states in per capita income by 2022. By 2029, to be the No.1 state in India not only in per capita income, but also happiness. By 2025, give Singapore & Malaysia a run for their money. We have 3 distinct visions for us. He is referred as a serial entrepreneur in his party and state. His 1st venture is Cyberabad which is a success story. He’s now into AP 2.0, building a new state from ground up. He is a technology freak though he admits to not using it during the meet yesterday. His vision is about creating connected governance aka real time governance. AP has millions of IoT devices which gives real time data and feedback for the govt, ministers & their portfolios. AP has a rain deficit of 24%, in 2016 but in AP Agri & Agri-allied grew by 14%. This year the rain deficit was 14%, but Agri & Agri-allied grew by 24%, compare with entire India which is at 3%. This gives an idea that resources are plenty but managing them is important. In AP, they sensorized the entire river, have phsiometers in the field that give real time feedback. His vision is to supply water to the drought prone areas through tankers that’s going to happen this summer.

Another thing is big data with numerous data points. Agriculture sector comes with hard mentality. The AP Govt has reduced onion sowing by 40% this cycle & cotton where prices have crashed significantly. Ministers are measured on the speed of disposing of files by the CM every 15 days. AP in 2014 was a $82 billion economy, which now stands at $110 billion and is expected to reach to a trillion-dollar economy by 2020.

Electronics design & manufacturing plays a vital role. Electronics & IT is a 400 billion economy & still growing. AP contribution was 0% in 2014 for this industry. Today, AP contributes 20% of all the mobile phones in India. This implies that with a good ecosystem, things can move very fast. It is in talks with Reliance Jio to manufacture 80% of requirements in India, ~ about 1 million devices a day. IoT is the new buzz, we call it DMD (Design, Manufacture & Deliver). Everyone is talking about Design, Manufacturing but nothing about Delivery, i.e. the logistics part of it. AP is working aggressively towards it. AP is building a Silicon corridor – starts at Chennai, through Tirupathi, Ananthapur district & ends at Bangalore. There is a need to create that sort of economy in India, at par with the dream, and vision that AP has. There are lots of opportunities, and states play a catalytic role for this to happen.

The tech awards are really an inspiration for young entrepreneurs, next-gen of job creators. We should thank Government of India, for doing interesting work with start-ups. With AP getting a lion’s share of the tinkering labs. This opens up minds of youngsters starting from Govt schools & Govt colleges to infinite opportunities. Mentoring is important rather than money. Inspire them and that will do a great favor in creating an ecosystem and infrastructure that will rival the best in the world.
Academia Award Winners

Techno Graduate Innovators Awards

Akanksha Yogesh Maskeri, Acharya Institute of Technology, Bangalore

Aliraza S Merchant and Team, OM Engineering College, Junagadh

Techno Inventor Award

Dr. Kunal Banerjee, Phd, Dept of CSE, IIT, Kharagpur

Techno Mentor Award

Dr. Anil Kottantharayil, Professor, IIT, Bombay

Industry Award Winners

Most Promising Start-up Company

Pranav Asthana, Co-founder, Transpacks Technologies Private Limited

Gokul Srinivas, CEO, Minion Labs India Private Limited
Most Innovative Product

Apu Sivadas, Chief Technical Officer, Steradian Semiconductor Private Limited

Srinivas Avalapalli, Sr. Vice President & Head Product Development, Mahindra & Mahindra Limited

Dr. Pradipkumar Thaker, General Manager & Senior Director, Geo Semiconductor India Private Limited

K S Sankar Reddy, President & CEO, Terminus Circuits Private Limited

Best Electronics Manufacturing Services Company

Ravindra Kumar, General Manager, Operations, Infopower Technologies Limited

Dr. Raghavendra Rao, Marketing Director, Vinyas Innovative Technologies Private Limited
P Rajamanickam, Founder, CEO, MD, Tessolve Semiconductor Private Limited

I started with Texas Instruments and I am glad that TI is the sponsor for this award today. Imagine if Vikram Sarabhai is here, what he would tell us today

Rajamanickam: Sir, I am Rajamanickam,

Vikram Sarabhai: Ohh you are Rajamanickam, So, you win the award this time, but I don’t know anything about you. You started a company and hired engineers to make money is it?

Rajamanickam: Yes Sir, kind of. But we did an Innovation. We are the first who pioneered a Test Engineering and Product engineering and did something new.

Vikram Sarabhai: All you guys say same things. Do something new. Do you know what we did in ISRO?

Rajamanickam: Sir, I know you did like Rocket Science. We have done a little bit Rocket Science ourselves. I believe that once we start improving our services and build our expertise, after five to ten years from now, we will be setting the standards, telling other people how to do test. we will do entire chain sir. But we have to start in small phases.

Vikram Sarabhai: Let me tell you about ISRO. When we started ISRO, nobody believed us. We are the bicycle and NASA was the Mercedes that’s how we built. NASA have billions of many and we have Lakhs of Rupees. But yet we are the Vision to connect all the Indians, we wanted to give television, we want to educate them about science and Technology through satellites, so we launched satellites, we build satellites

Rajamanickam: Sir, I think ISRO and Tessolve is similar we also have lot of passion. It’s not just money that drives us. We want to make difference maybe this award will make the difference.

Vikram Sarabhai: Tell me want you want to do, maybe I can give you some suggestions
Rajamanickam: Sir, when I came to India, I first wanted to do manufacturing, but we could not able to do that because of some reasons. When I want to start the company here everyone said, Indians can’t do Manufacturing, they are only good at engineering. If you give instructions to Indians, they will challenge the Instructions.

Vikram Sarabhai: Its common, let me tell you, from last fifty years or so, semiconductor has made many changes in People’s life. In last five years, the momentum is picking up for all kind of people because its becoming a huge drive of commoditization. Now we are starting see the real applications. So, I believe we are in the cusp of revolution where the semiconductor electronics will be consumed largely by ordinary people. In next 10 to 15 years, the consumption of semiconductor will solve the real problems. Where is the bottleneck for affordable products? Here is ICA, Inter-connect which puts all these technologies together whether we are talking about digital processor, MEMS, antenna, memory, power packs all of this together and you can design most powerful chip but the moment you touch inter-connect the speed is gone and power is gone. So, innovation is in Inter-connect, the Integration is in Inter-connect. I just researched little bit about wafer level CSP. I believe this is one of those technology that’s adaptable. Wafer Level CSP has the ability to meet the objectives of low power, no loss of performance, enable stacking, we can do 3D Packaging, we can do all kind of things with wafer Level CSP and its cost-effective and relatively easier to build. So finally, what ISRO is really proud of? We can launch satellites at 100 the cost of what NASA can do and today all over the world people are asking ISRO to launch satellite for them and develop stuff for them. It is in our DNA, we are Frugal, design and developed by frugal engineers. So, it’s going to manufactured by innovative factories for billions of ordinary people. This is what I think and it’s going to be happen.

Rajamanickam: Sir, this is a fantastic, I didn’t realize that after so many years, but you are up to date with technology. So, what do you think I should do next.

Vikram Sarabhai: Now you have my award and I think you probably deserve it. But, take this as a stepping stone and build on this and make this vision come true and don’t retire until you make this vision come true.

Rajamanickam: Yes sir, we take up this challenge and we will make this vision come true.

Technovation Sarabhai Award (Posthumous)

(Late) Sri. Dr. Shivaling S Mahant Shetti

Smt. Tasneem Mahant Shetti, thanked IESA for recognizing her husband (Late) Sri. Dr. Shivaling S Mahant Shetti. He was instrumental in getting VLSI business into the country. He was a visionary far ahead of his time. (Late) Shri. Dr. Shivaling Mahant Shetti in a true sense is a Karmyogi who spent his life building the nation. Dr. Mahant is regarded as the father of Analog Design in India. He held 67 patents to his name and an experience of over 3 decades in chip design. He spent his life creating and nurturing engineers for the semiconductor domain. Dr. S S Mahant Shetti was instrumental in setting up the Karmic Training Centre. He also set up Karmic Training School and Research Centre that provided food, shelter, clothes to kids and had rural areas special courses on English and communication skills. He founded Karnataka Microelectronic Design Centre Pvt Ltd (KARMIC) in Manipal that focusses on designing complex chips. He has emerged as a team with in-depth acumen in Memory, High Performance Digital, Analog, RF and Mixed Signal domains.
Jury for Academia Awards

Vivek G Pawar, Chairman, Sankalp Semiconductor Pvt. Ltd.

Prof. Deepak Gupta, Indian Institute of Technology, Kanpur

Prof. Rajat Moona, Indian Institute of Technology, Bhilai

Prof. Rudra Pratap, Indian Institute of Science, Bangalore
Jury for Industry Awards

Som Pal Choudhury, Director, Bharat Fund

Arun Jain, Director-Sales & Marketing, Texas Instruments

Anil Paranjape, Venture Capitalist & Entrepreneur

Vinay Shenoy, Managing Director, Infineon

Sateesh Andra, Managing Director, Endiya Partners

Rajesh Krishnan, VP Memory solutions, Samsung Semiconductor India Research
Day 2: February 28, 2018

Smt. Awantika Varma, Manager IT Parks and Investment Promotion, MPSEDC

It’s my pleasure to be here to welcome you all from the city of lakes & we have come all the way to Bangalore to invite you all to come and make an investment, make your compatibility with MP & we are awaiting your presence in MP. Even the CM, entire political bureaucracy will be there to support you. before we start the presentation, I would like to show you just a 3-minute video film which speaks about the ESDM sector which is going to start in MP. After seeing the video, you must have understood that MP Govt is very proactively working and trying to establish ESDM as well as IT parks in MP and we are here to invite you to come and see what is happening there. It has become mandatory for all MP departments to work and deliver such citizen services electronically. More than 500 services have been delivered electronically & online. The service deliver is backed by the service deliver Act which gives guarantees that all the service must be worked out in the best possible way and in a time frame. There are 77 million people in MP & that constitutes 7% of the entire Indian population & we have identified 4 major cities that come under Tier II i.e. Bhopal, Gwalior, Indore & Jabalpur. The key advantages are that it is strategically located, is a central hub, and has got a strong base. We are churning out around 1 lakh of engineers every year and utilizing their services in MP and other states as well. MP was considered as one of the best state for ease of doing business and among the top 5 according to Govt of India and World Bank declaration.

India: The nucleus for International collaboration in Electronics Manufacturing

Guest of Honor:

Shri. Sanjay Rakesh, IAS, Joint Secretary, MeitY

All the policies & programs are in public domain. Anybody interested in putting in a facility or a factory would know those policies and if there are any issues that has to be resolved, it has to be specific. So, I rather than having this one-way communication it’s better to have a two-way communication where you ask what is it that is putting you behind and what we understand. The purpose for which I have been put in the job; I am doing my job to encourage or promote you to come to India, to set up your factory and work here. Now, we know that the industry will set up shop here only when its profitable and when conditions are suitable for setting up that factory. Issue of topics that I have been given: Will India be the nucleus for international collaboration for manufacturing of electronics and all aspects of electronics – design, fabrication, manufacturing, & after sales services. If we see the journey for several years, especially the last few years, it seems the time has come for India to emerge as a Manufacturing hub for the world. Geopolitical, economic situations are coming times & those who can spot it earlier will be the real gainer. Now if we look at it we know that international conditions are changing. The competitor in this world, China will be financially turning costlier and I am told that labour cost is going to be 40% higher than India and so they need to shift the industry from China to some other place. Yesterday we had India- South Korea business summit where PM of India Shri Narendra Modi made a statement. He said, “India offers 3D advantages – advantages of democracy, advantages of demography and advantages
of demand. India today have all 3 advantages. We are a high-tech society, democratic society which is rule based. With these essential conditions in place, we are of the view that with active support from the industry & also from those sitting abroad willing to come to India or exploring the opportunity, it’s the right time to come and start working in India. In most of the states IESA has been partnering with the states & other states have their own policies & incentive schemes to support the industries. We have clusters in 15 states, manufacturing clusters for electronics exclusively & all of them have advantages unique to their states. You can explore that, knowing their cultural patterns, know their incentives & take a call. I’m sure Andhra offers a one stop shop and will give the plan in 7 days with all clearance from the day you submit the file. Yesterday, we had Assam coming up with a set of incentives explaining to the South Korea summit. They have a 100-acre land with lot of water & very good climate.Similarly, Odisha, Telangana, Maharashtra, Gujarat, Andhra, TN are all old hands in this, but newer states are coming up like Bihar. So that gives an indication, an opportunity for you, the way things are changing. I am sure in the coming days this will become more oriented towards the industry requirements and we’ll have a vibrant electronics manufacturing system including it’s software aspects, I do wish that conferences like this serve the very purpose to bring together industry people, bring policy support system in the industry and the innovation part together so that it leads to more investments, interactions and better future for all of you.

International Collaboration – Perspectives from Sweden, Taiwan & UK

Special Guests:

Magnus Svensson, Programchef, Smartare Elektroniksystem (Sweden)

Collaboration between India-Sweden is not new, its ongoing for many years. It has been manifested on the highest level last year October. The Make in India programme was arranged in Sweden in the capital Stockholm and one of the sessions was hosted by our Prime Minister Stefan Lofven. Let me elaborate little bit about the opportunities and incentives for collaboration that we see from Swedish and European prospective. Digitalization is called the fourth Industrial Revolution and if it's not already upon us, it will hit us very rapidly. If we were not preparing for digital revolution, I think we will be left behind. In Sweden we had pioneered a bottom-up approach for innovation support in industry and public sector. Three of funding agencies like Swedish innovation agencies, Swedish energy agency and Swedish Research Council has created a joint venture “strategic innovation areas” where they outsourced possibility to create calls for innovation and strategic initiative or supportive measures. Groups of industrial players, public sectors and academia are joined for describing what goals should be set up, what activities should be made and if these activities are deemed realistic and the goals are also reachable then it will become strategic innovation programs. So far, 17 of these strategic innovation programs have started, and I am representing one of them as Program Manager for Smarter Electronic System. It was started in 2015, so we have been working for three years. We are tackling three main challenges for the electronics sector in Sweden:

- To increase effectiveness in the value chains.
- To maintain and develop Swedish excellence areas
- To secure the skills supply in Sweden for the sector

Swedish Government has also realized that the politicians might not be the best to predict the future and come up with strategies for them to support the demands from the rapidly changing society and the industry and it’s not only the industry that changes, it is the society as a whole. One example for instance is the transport sector, when we talk about electrical cars, the industry will need to change when it comes to manufacturing of the cars, but we also need to change the infrastructure if electrical and self-driving vehicles are supposed
to be here and it will be very certainly almost in a few years. So, driven both by technological development in the industry necessity from a sustainable prospective, no matter what President Trump says in US, the climate change is here, and I think it caused by humanity and this vision is shared by most of the countries in Europe and I also heard it that India shares this opinion. The healthcare sector is another area that outline and access the needs to dramatic changes and increase productivity. If we want to maintain our ambitions to care for constantly elderly population. Sweden is trickling this and try to get a more bottom-up approach on innovation. I mentioned the strategic innovation programs before, but the Swedish government also in 2016 launched five innovation partnership programs to help meet the range of societal challenges which Sweden is facing. These programs involve new ways of travelling, residing, doing business, living, communicating in news, in person using and preserving the world’s resources and ecosystems. Partnership between public sector and business academia creates new innovative solutions. The strength and competitiveness contribute to sustainable development and create more jobs. The partnership programs give recommendations directly to government and they can give executive orders to Swedish agency for innovation systems and mostly they chanelize this through the 17 strategic innovation programs. Governments all over Europe has also started realizing that politicians need input from the industry, academia and public sector. So last week European Commission launched similar initiative like Swedish Partnership programs at EU industry last week. Vice President Katainen, announced formation of high-level industry group to create advice and strategic decisions for the commission. The common European research programs called framework research programs are settled for seven years at a time, the present one “Horizon 2020” will end in 2020. So, now there is a debate, consultancy and negotiations to form the next program it’s called “Framework program 9”. Conclusions and recommendations from a mid-term evaluation on the ongoing framework program has been concluded that these are very successful when it comes to strengthening and creating increased competitiveness for European industry. So, one recommendation from the report of the evaluation of the framework program is that both EU and national budgets should double the budget of post 2020 EU research innovation programs. However, digitalization is coming up rapidly. Some areas need more rapid actions which cannot wait for next framework program especially there are four areas mentioned:

- Cyber Security (which is mentioned as a very strategic area for India)
- Artificial Intelligence
- Machine Learning
- Deep Learning

So how should we create international collaboration? In Europe, we have something called “Eureka Clusters” and “Swedish National Agency” a funding agency for innovation ‘Vinnova’. They consider these programs as very strategically important for Swedish industry and these clusters are open for non-European members of the negotiation of course. Several countries have discovered these programs and joined them, and most active ones today are Canada and South Korea, but we welcome other countries as well in these programs. I think they are excellent tools for collaborating support between countries. In this rapid growth, there is an immense pool opportunity for Swedish companies but Indian companies that are growing and need access to market with the relatively high level of digital maturity. We simply need to find ways to get together and discover each other’s skills and opportunities and I have so far had many very interesting and hopefully fruitful discussions. That’s why I am here to meet you all and see what opportunities you can have to the future.
Colley Hwang, President, Digitimes Inc. (Taiwan)

It’s my great honour to be invited here to give a talk to introduce how India & Taiwan can work together. I would believe industry is in the right stage because we are new from multiple different perspectives. So, for us to be the new software market we need 20% or even higher endorsement. So, I believe that we are the new opportunity for vision. Until end of last year, we had 801 companies from electronics industry, we need to start training in Taiwan, till last year the total revenue was $645 billion, of which 99.4% are hardware. Hardware is easier to sustain. About 57.3% of ICT companies in Taiwan are from the System and Production-assembly field. There are around 86 companies in the semiconductor space. How about unicorns? 214 companies. 50% from America, 26% from China. No companies from India or UK.

The rest of the companies are from SE Asian countries. So, I talk to my Indian friends. 1st war is with America, 2nd war is with China. India, Korea, Taiwan, China, Japan are at war. But we’re different. In India, we don’t have 4-layer PCB which Taiwan also doesn’t have. How to work together with Taiwan? Maybe we can work as a unit, but we need to think about it in a different way. Welcome to Taiwan.

Irene Lopez de Vallejo, Director of Collaborative Research, Regional and International Development, DIGITAL CATAPULT (UK)

It’s my pleasure to be here & give an overview of the work we’re doing in UK. It’s a small piece of the picture because UK is a small country compared to India. There is a lot of work going on the technology as you know. We focus on 3 main technology areas: Manufacturing, Creative industry and Digital health. The focus of this session is on what we do specific to the area of manufacturing. Of the 10 catapults, there are manufacturing catapult & digital catapult, our focus is different & bringing the 3 technologies closer to market. We focus on bridging the gap in the area specific aspects that the UK govt has identified. We focus on 4 sub sectors – aerospace & defence, automotive, construction engineering & fast-moving consumer goods. We do programs of innovation that means bringing digital infrastructure. Think of IT test beds, one that we have. It could be an experimentation environment for AI implementation. We have a program called Machine intelligence garage, we have over 200 papers on low power wide area networks. All these things are open to the digital community in UK. We help companies working in IoT, Machine learning, AI to come & experiment with the latest in cloud computing specializing in ML, AI algorithms & learning IoT technologies. We’re keen to experiment in different business models and inform them on how these technologies change the way they work, change the way they do their business. It’s very important in the manufacturing sector as many of the companies have traditional working methods and processes. As they say, AI applied to your product is going to change your workforce & you will have to be prepared for that. There are a number of faces to the Indian programs – commenting on the assets of the product life cycle, introducing intelligent technologies into this line of work and in the future bring future networks into this chain.
Panel discussion: Entrepreneurship and Innovation for Success

Sateesh Andra, Managing Director, Endiya Partners (Moderator)

I think we have a very interesting panel, I just want to know how many of the audience are start-ups or entrepreneurs (very few). How many are working for technology companies (majority). The panel discussion today is about an Indian Semiconductor start-up. We all know that in India we have seen several waves, we have seen for long the Information Technology wave, later the whole BPO, KPO in the services – better, faster, cheaper. I know EDA services and VLSI and chip designs are also a wave at the time frame and the third wave was more of ecommerce and mobile apps but today we are seeing deep tech start-ups. The reason for these deep tech start-ups are the returning Entrepreneurs from overseas, the young graduates from Indian universities and also people working in R&D centers locally. They are leaving their jobs to start a company. Outside of that, the availability of early stage capital as well as corporate accelerators that we are contributing.

Nagendra Nagaraja, Founder and CEO, AlphaICs

AlphaICs designs AI Processor with the most powerful processor in the world. At AlphaICs, we are designing something called RAP (Relay AI Processor), that is addressed both for core and edge of network. What we have designed is a chip based on Agent based computes. This is a new architect which addresses all kind of AI and the advantage is that, the processor we have can do what google took to do in 7 days, it will do in 6 hours. So, google deep mind actually came to frame this particular game “ColAttari”. This is completely done with Hardware and Software. These are like custom instruction for AI which is replacing almost 64GB use, we are doing it as 1 processor and it was trained for 6 hours. This game was mastered by Qualcomm, our own processor compared to NVIDIA in 6 hours. This processor also does driving cars. It can be used In IoT, it can be used in Datacenters also. After 6 hours it’s come to “Attari Break out” which can achieve in 6 hours but google deep mind took 7 days to do this. That’s the power of this processor. This can also be used for Manufacturing like designing chips. We have a patent on designing chip and this is one application on this processor.

Apu Sivadas, Founder & CTO, Steradian Semi

We are building a sensor for self-driving car using radar technology. We have a video which shows how the systems works in a drive way. How it works? We have a radar, in which there is a technology through the war time onwards to detect a target. But old school radar they show an obstacle as a point that it is desiccant distance and it is at an angle. So, what we are doing is take that point tracking type of system to convert to 3D or 4D terrain mapping system. The main application is in self-driving car where biggest drawback is that there are 2 parts in self-driving autonomous technology. One is Sensor, which has to work as failsafe in fog and dust as well as...
Dasaradha R Gude, CEO, INVECAS

Start-ups can take on the world, though it is extremely difficult, is not impossible. Unless you have the time and partnership advantage, it is possible to go forward. Last week, MediaTek had mentioned about its interest to venture into ASIC design 99% business in ASIC design is not good. But since I started the ASIC company in 2014, it is better.

Panel discussion by States on Policies
Sanjay Nayak, CEO & MD, Tejas Networks (Moderator)

For the past 7-8 years we are all talking about ESDM and how to promote ESDM ecosystem in the country. We have central level polices which have now been executed by the States.

There are 2 problems to solve: To understand where the value addition happens in the ESDM ecosystem. If we see product creation, the R&D, design, hardware, software, IPR probably constitute about 50% of the value addition of a product. Because if you don’t own the design, if you don’t own the product you can do a very little value addition and remaining 50% and ofcourse all of these numbers change depending on what product we are doing is the function of doing 30 - 40% comes in the form of components, 10-20% comes in the form of assembly manufacturing test. We really have 2 approaches we can take, both of them are complimentary approaches.

- Design-led manufacturing - we support 50% of problem which is how to stimulate lot more product creation, lot more start-ups, lot more companies which own IPR in India, because eventually that will give you the higher amount of value addition.
- Factory-led Manufacturing – where we actually attract global investment and Indian investment in terms of component manufacturing EMS etc., because we have to be clear that the economic value add is what actually create jobs that is what we really make the difference.

India as a market is probably a single largest asset that we have. We may be handicapped in terms of infrastructure, logistics, late starter in the hardware play compared to China and other countries. But we have a significant advantage that, we are one of the largest market, largest consumer of electronics product in the world which is not producing domestically. If we see telecom revolution happening in India, 4G data and now 5G, if we see Bharat net, Smart city, State Government Datacenters, everything electronics in terms of IoT, there are tons of demands right in our home market. We have to take advantage of that large demand both for understanding the problem that entrepreneur need to solve and for creating product which is not just relevant
to Indian market, but India will also represent 2/3rd of the world population, what we need in India is need in South East Asia, Africa, Latin America. I think we are talking of largest problem pool in the world, where local entrepreneurs can look at and solve the problems. Macro Trend is happening in the world. 20 years back, hardware and manufacturing was the fuel which ignited the ESDM industry in China. Today software, design and IPR is the fuel which is going to be ignite the next generation products. Software and design is the sweet spot of India and this has to be taken advantage of. At last I want to tell is today we have all the states competing in a healthy way for creating a ESDM ecosystems in every state. You have an ideal electronics policy and a hardware policy in every State. 10 years back the Hardware word was vanished but now I am happy to say the Hardware word have come back.

**Sh. Bhaskar Reddy,** CEO-Electronics Promotion, APEITA, Govt. of Andhra Pradesh

When Andhra Pradesh was divided, it was necessary to bring Manufacturing to the state. We realized that the employment is created only through manufacturing. Instead of concentrating on IT, the State Govt started listening to the industry and then after hearing from the industry expert, we are started forming the policies. In last 2 years, we focused entirely on getting these units (designing, components, assembly manufacturing etc.) gave big competition to Noida to getting a big guy like mobile assembly or mobile manufacturing into Nalluru and Tirupati cluster. Now we are going to next level that reliance has announced a big investment in Andhra Pradesh which will start from next month. As we don’t have time, instead of concentrating on components, we are going to the design part of it. As we travelled to many countries like Taiwan, Korea etc., we saw the problem in Logistics because the size of manufacturing is huge. So, we are coming up with policy where we will take care of that. All the states have same policies which give power subsidy, training subsidy but figure may change. We started saying investor to look at the policy, if there is a pain point them come up with a wish list so that it will take less time to finalize things.

**Sh. Keerthi Laal Kala,** Head – Investment Promotion, CHiPs, Govt. of Chhattisgarh

The focus on IT and Electronics in Chhattisgarh started in 2015, if you say as India we are late, probably we are the last benchers in that race at the end of the day. But I think it as an opportunity rather than a disability. In 2015 the electronics and IT policy for the state was announced. First thing we did is midterm evaluation, as the policy has been operational for 2 years and policy period was 2014-2019. At the middle juncture review against not only existing policies of other states and country, we realized that our competition is not just between the states and country but it’s with Vietnam, Indonesia where people are setting up manufacturing facilities. First exercise we had undertaken for ourselves in 2015 is to benchmark ourselves against what these people are offering. Over the past 6-9 months we have consciously taken a call if possibly we make it zero or at least minimize cash payout from the states to an industry, balance it against the incentive in some other form. With regards to the opportunities in the states and the sweet spot we can sit in? - We are good at mining, steel production, power generation, cement production. Most of 15-20% of Indian production happens there. Also, Chhattisgarh was the first state in digital India Week held in 2015 that have common service center or choice center providing 283 services on daily basis. We also have heavy focus
on using technology in governance and we are also slowly graduating into using technology in education, in healthcare and other areas. We know, we are sitting at 2 to 2.5-million-dollar opportunity just in IT and Electronics systems and automation space. What we are doing is how can we create avenues for companies large, small, start-up all. The only addition I am doing is, now a days with many technologies being started like IoT, 5G, Immersive technology, blockchain, digital transaction, POS, etc., we are thinking to focus on that and create an opportunity for people within this space. Finally, we are the first state to announce the PMA policy where preference is given to value addition in the state in public procurement. The eligibility criteria are based on value addition that we do within the state.

Dr. Jayasankar Prasad, Special Officer, Hardware Mission, Govt. of Kerala

From the state of Kerala, our policies are focused on working around large SMEs, which is already there in the state. Our plans are helping them to grow and build a set of industries around it and help them to grow up the value chain. The strong line-up of starts-ups grown from there & been able to showcase themselves, probably led manufacturing may not be high volume or a big factory, it’s a small state and area is limited, and environment sensitivity is high so We have lot of limitations in terms of what part of the value chain could be absorbed. We need to observe which area we have look at too. Keltron and few other companies are already in Kerala. The Vikram Sarabhai Space Centre has to be explored and worked with. We are trying to work with them commercialize ISRO centre in Trivandrum.

Kerala have a strength man power, human capital so obviously skill power is coming in our area. So, we have to focus on where we find opportunity to make them to deployed. We are also focusing on value addition but problem is not getting narrow being in the state but that is what we are talking about that we have to be in the state and in the country. We are getting fiber optic network program which is a thousand-crore project which will help the networking optics to grow. Start-up is another area we are focusing, we are trying people to move out from bulk recruitment where they are finding shortage of placement also which is much more serious issue we are addressing and working on it.

Panel discussion: Enterprises – How do we embrace the IoT and having a Real security framework in Place?

Akshat Vaid, Engagement Lead – Digital Transformation, Zinnov (Moderator)

IoT as we all know is one of the most transformative digital levers today globally. Close to USD 170 billion were spent last year on just IoT related initiative, that cover gamuts of developments of products or deployment in IoT across verticals. Quite a few verticals includes manufacturing, retail, healthcare etc. IoT takes various forms in manifestations within these industries. At Zinnov we work a lot on IoT digital transformative areas. We have seen attacks where people taking over cameras, web servers etc., and we will see. We have seen attacks where people taking over cameras, web servers etc. and we’ll see new ones every day & how we systematically approach the problem. IoT is a stack with 2-3 different layers with sensors, networking gateways, platforms. There are apps built on top of it. We have operational intelligence
& analytics on top it. If we look at any hybrid environment as an IoT layer of stack, there are so many potential points of failures where vulnerabilities could be associated.

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K Krishnamoorthy, Corporate VP & Managing Director, Rambus Chip Technologies

You have to be secure all the time & to the maximum possible extent. We can’t always look at 100% security all the times at phenomenal costs. Look at 2 recent incidents

1) Attack in Finland where the central heating system was down & affected large part of the population.

2) Attack on the siren alarm system which affected the city for 2 hours. Authorities had to individually switch off the system manually.

I thought of the Bangalore traffic & thought of having a drone moving ½ kms ahead of the car which controls the traffic lights turning them to green as the car approaches. Another is the advertisement for a tyre company where a person wants to cross the road. Now consider a wearable tech which diverts the traffic if we want to cross the road. These are possible scenarios which will play out soon unless we prepare ourselves. If we peel the onions of different layers of vulnerability the first one that come is Edge Sensors which is considered to be low cost end point sensors and which has very less resource in terms of compute power, memory etc. It is a prominent but has the least of capabilities to be made secure. The second is the entire fog and communication part for which there are software based solution deployed. As we move up, the cloud and application layer which are venerable for threat perception to be secure.

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Bikash Barai, Co-Founder, FireCompass

Previously worked in an AI company for ethical hacking and took our product to the cloud. Now the company is part of Synopsys. My background was in breakers. I was part of Security products. Security is an unfair game because hacker needs just one success and you need continuous success to keep your assets safe. So, securing this 100% is impossible. Around 10 years back, a majority of the themes was applications level hacks. Then it changed to social engineering where it involved hacking humans. Today IoT hacks is the latest trend. The game of hacking threats, vulnerabilities has not changed much. For IoT it has become complex for the defenders. Now I have found FireCompass company using AI for cyber security preparedness, assessment and offers solutions. In case of vulnerability of security, the architecture is an important aspect. To know architectural flaws, Microsoft has come up with a model ‘Threat modelling approach’ and another one called STRIDE. Then is the hardware hacking. The other is the OS vulnerability and look at CVE. There are lots of VA tools to find the vulnerability issue.
Thomas Herbst, Director Marketing IoT, ARM (Moderator)

I am still surprised that we are still talking about IoT security. 30 years ago, we replaced the electro mechanical gears, washing machines & other systems with microprocessors which was cheaper and added new capabilities that filled the gap in the electro mechanical systems. We take that code now & apply it to the internet & we find that’s a problem. The developer responsible for the code never had to fathom on having to defend against someone hacking on all possible sockets. That he had to defend against all 100s of possible scenarios. With controlling devices, it’s not about arm cycles, but securing the devices because of the trillion devices which are not secure it’s a total disaster. People are used to building devices that uses connectivity and I won’t change it unless it faces a threat or new vulnerabilities are found. With the constant attacks on the devices on the internet, they have to constantly adapt to the changing environment. People need to think about managing credentials that are now much more specific. We really can’t blame the embedded person, we have to put systems around them and frameworks where they can build safe systems which are deployable. ARM has 100 billion devices deployed. This is indeed a great start, but our owner’s (CEOs Softbank) goal is a trillion devices. It’s not about clock cycles, it’s all about security. Because, with a trillion devices, if you are not secured, it’s a total disaster. It really comes back to what are some of the threats? People are used to building appliances where there was no connectivity. That’s not the world we live in anymore, new vulnerabilities are found; the constant attacks that are happening over the internet, the devices should be able to adapt the change. The first layer of vulnerability is the device capable of dealing with the physical attack. It is necessary to know the threat model – the cost of information versus the cost needed to protect it. The most important thing for the enterprises have to make products that are appropriate, have to make it easy, and cost-effective.

Akshay Kadam, Solutions Architect, Intel India

Intel has emerging focus on IoT. From the security standpoint, given the IoT penetration in all areas of healthcare, industrial, automotive & all other areas. Security is a key aspect. Unlike earlier systems which had well defined system like servers, IoT spans the entire segment right from the edge to cloud and various functions in different places. Because of this spectrum it opens up Potential attack points up and down the stack and that’s a challenge for us to solve & the entire industry is working towards it. One of the interesting benefits of the Intel space is how hackers find novel & interesting ways to get into system there we need to fix.
Panel discussion : Deep Tech Manufacturing & Electronics Manufacturing Service

**Sreevatsan,** DGM, NSIC (Moderator)

NSIC is in the MSME domain. We are a model agency for cost and development of MSME in the country. We interact with various industries and one which is of interest and which drives the technology is the electronics industry. Its relevant when we talk about digital India or Make in India. It’s a dynamic industry which changes even before we can assimilate what has happened earlier. This industry is varied and should not be based on subsidies. Lots of investments involved right from FAB to the assembly line involving millions of rupees with a turnover of 100 crore or more. The perspective of NSIC was to improve the market of NSIC products. We have now dovetailed to the credit system to the entrepreneurs for setting up their business. Both technological & commercial ecosystem are important. Commercial understanding is important where we justify how to utilize the technology into a commercial perspective. We should also exploit the commercial ecosystem and absorb the support systems.

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**R G Shenoy,** COO, Genus Electrotech

People want vendors around the manufacturers so that we can get quality products from the factories. In our company we have all the facilities under one roof. We have DCP facilities, cables, moulding, chip metal, odour coating under one roof. Problem here is why we can’t have a growing, productive ecosystem compared to China. Why are we still importing? Problem here is we’re into PCB business unit. We have invested almost 20 crores in the last 1 yr. Our PCBs are used in lightings, set top boxes, LED TVs etc. but these Indian manufacturing companies won’t buy from them because of cost factor. They still import from China which is a threat to us. Make in India informs that we should have an ecosystem ready, Government is giving incentives for it (ex. Andhra govt & others) - water, design integration systems & other facilities. But problem lies in the market. Domestic people should buy from us which is a challenge. Import duty should be increased to 20-25% to overcome this challenge. For IT products, we have good moulding facilities but have cost constraints. We are the only company which has vertical integration right from PCB, moulding, designing & packaging. Our objective is to align with the IESA principles. We have good assembly lines but compared to China it’s less. How to be productive & competitive (both man & machine) is a challenge. With good initiatives from Government, we can achieve this.
Y Venkata Subba Rao, Additional General manager, ITI

ITI is the pioneer in telecom. Established in 1948, it backs leading technologies like IoT. With help of start-ups, we have built an IoT ecosystem of marketing, manufacturing partners and an even clients base. IoT is all pervading, in all industries including electronics. We believe a strong ecosystem is the backbone of any technology for it to grow & sustain. So we started the IoT Center of Excellence (COE), where we have collaborated with many start-ups companies to design, develop & even do private manufacturing. Deep tech manufacturing – how do we do it? From ITeS perspective, it’s more aligned with the industry 4.0 where it has given rise to industrial IoT also. It’s making manufacturing more productive effective and geared up for more voluminous production. Big data, robotics, AI, augmented reality etc - these are all the concepts that’s taking electronics manufacturing to a new paradigm.

H Nagaraj, Finance Controller, Velankani Electronics

We started off with manufacturing, then moved onto servers, feature phones. We are electronics loving country with 1.2 billion people, with min. of 2 mobiles etc. but the bad part is most of the electronics is imported into the country. The Govt is working towards building up of policies to enable make in India initiative a success by encouraging the electronics manufacturing not only the PCB’s, assembly stage etc. Ministry of policies is devising a set of policies/rules. Important now is not the lack of talent, money but the policies that enable the domestic manufacturing in the country. Polices in China, Russia, US are there to include, enable and protect the domestic manufacturing sector. It's not subsidies or rupee deferential that's going to help in India. They may help to some extent but they are not a long term solution.

Makeathon Awards Felicitation

Venkatesh (Venki) Kumaran, Sr. Director, Business Development, ARM (Subsidiary of SoftBank Group)

IESA started the 1st edition of Makeathon awards 3years ago. This is the 3rd year. Earlier 35-40 teams applied for the Makeathon awards. This year, 88 team applications were received throughout India. The objective of Makeathon was to enable the maker community in India and drive technology & innovation in electronics & systems design manufacturing in India. This year, 29 teams were selected & there were more than 150 participants. Nayaz from the JUincubator helped in the selection process. The entire process started 2-3 months ago.
Nayaz Ahmed, COO, JUincubator

The Makeathon Journey started from 2 – 3 months back, JUincubator is a start-up recognized by India and hosted by a nonuniversity for entrepreneurship that is Jain University. At this time, we are reached out lot of ecosystem partners, we had Yourstory, Funtonic as a partner. We also interacted with some of the startups like Passion Connect, Campus Time to spread the word. We did a pre-event on 26th Feb in our campus in JP Nagar, Morning Session, we conducted Technical IoT workshop where, our partner Weiner Technology Solutions, they help us to conduct the workshop. Afternoon, we conducted Design Thinking Workshop. In this student identified the problems of those target audiences and identified, which could be the most probable which they would like to solve. So, during the course of Makeathon, the 24 hours, we had lot of experts and we met lot of speakers here to share their experience with these known entrepreneurs. From this, we have built very good solutions. At last, I would like to thank IESA to give this opportunity and all the mentors and jury for giving their suggestions.

The Winner — TECH-INS

Idea : LOTO aims at minimizing the chances of workers being electrocuted at industries
Special Recognitions
1) The DOST Team
2) Syntax Error
3) Jeevan Anand
4) TriSpace

Vote of Thanks
Anilkumar Muniswamy, Vice Chairman, IESA and Director, SLN Technologies

Honorable Minister and Friends from Industry and all the brand ambassadors of IESA and ESDM welcome once again.

First of all, I would like to thank our Honorable Minister, Mr. Priyank Kharge, Minister for IT and BT. He is minister for others but for IESA, he is partner, mentor. During his tenure we have done significant events. With his leadership, we setup Center of Excellence for VLSI in KLE Technological university in Hubli, ESDM Center of Excellence with Deshpande Foundation in KLE Technological University and now we are doing Semiconductor Center of Excellence and Accelerator Lab. Karnataka has established its leadership position in Electronics, Semiconductor design. We at IESA, strongly believe in Design Led Manufacturing because design is the starting step for anything to happen that is, in Manufacturing or to become an expert in electronics. In this way Priyank sir is helping us so thank you so much for being with us sir. Secondly, I would like to thank Ms. Dana Kursh, Consulate General of Israel. She was so humble that we sent only one request without follow-up she kindly agreed and grace this occasion. Thank you, madam, for your support.

I would like to thank Mr. Shailendra Tyagi, Director, STPI Bangalore. He is always our supporter. Thank you, sir. Dr. Ashok Shettar, Vice Chancellor, KLE Technological University (Techno Visionary Award Winner) would like to thank Mr. Omkaram Nalamasu, Senior VP & CTO, Applied Materials, Applied Ventures LLC, US and he is one of our sponsor.

I would like to thank Mr. Magnus Svensson, Programchef, Smartare Electronic System, Sweden. Our
representative Mr. Sanjeev Sharma in Sweden contacted him 2 months back and he agreed to come. This is his first visit to India. Later on, he is planning to bring Delegation of Medical Electronics cluster from Sweden to India. That will happen in July 2018. Thank you, sir. I would like to thank Mr. Colley Hwang, President, Digitimes Inc, Taiwan. He is going to be our ambassador in Taiwan to promote or bring investment from Taiwan to India. Thank you, sir.

I would like to thank Mr. Ajit Kumar Manocha, President & CEO, SEMI. He came from USA to support for our event. Thank you so much sir.

I would like to thank Mr. Tetsuro Higashi, Advisor, Director, Semiconductor Equipment Association, Japan and Director of Tokyo Electron Limited. He got a delegation from Japan and they are going to be here in next 2 days. Thank you, sir, for being with us.

I would like to thank our Chairman, Mr. Ashwini Aggarwal, IESA for all his support. I would like to thank all our sponsors

- Platinum Sponsor - Applied Materials
- Gold Sponsors - Intel, Lam Research, Seagate, Synopsys
- Bronze Sponsor - Sankalp Semiconductors
- Karnataka State Government: They supported us right from the day IESA as Started.
- State Partners – Andhra Pradesh Govt, Chhattisgarh Govt, Kerala Govt, Bihar Govt and UP Govt
- Key Partners - SEAJ, TEL and Western Digital

We have permanent Partners and Supporters for our events. I would like to thank MSME, NSIC, METI, STPI, ESCCI, KBITS.

I would like to thank all the Makeathon Award Winners and participants, it’s a fantastic job. In last couple of years, whenever we are organizing these kind of events, my Secretariat comes and tells we unable to arrange the sponsors for Makeathon. But we have one evangelist among us Mr. Apu Datta who managed and get the sponsors. Thank you Apu for this. From IESA, I would like to thank Abhishek, Apu Datta, Aruna, Bhavani, Chandrakala, Gaurav K Punjabi, Hepsita, Ramakrishna Hegde, Rajeev Jain, Rajeev Wadhwa from Delhi Team, Roopa, Suriya Kala, Swayam Prakash, Accountant, Swapna Singh, Swapna R, Suman Pillai, Muthu and Ventakesh.

Lastly, I would like to thank our EC Members Jitendra Chaddah, Rajeev Khushu, Rajesh Krishnan, Vivek Pawar, Ram Reddy, Niranjan Pol, Vivek Sharma, Som Pal Choudhury, Ashwini Aggarwal; our Chairman, Krishna Moorthy; Past Chairman. I would like to thank all our past Chairman who supported us are Mr. Satya Gupta, Sanjeev Keskar, Jaswinder Ahuja, B V Naidu and all of them. Particularly, Mr. Kumaran Venkatesh (Venky) from ARM and Guru Ganesan really gave lot of support to us. I would also thank our Hyderabad Team. I thank all the members who came and attended this event and all the Start-ups Companies, they did a great job. I would like to thank our supporter Jain College and all the logistics support we got from Hotel and Partners, Public Relations for all the technical Support. Thank you once again, will see you next year on 26th and 27th February 2019

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Please Note: The videos of the speeches are available in YouTube – IESA Vision Summit 2018
### Exhibitors

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