GLOBAL
TECHNOLOGIES

Your Window To The Tech World

- **Start-up Hub**
- **Innovation**
- **HKTDC**
- **Electric Car**
- **Virtual Reality**

Readers: Our Most Precious Asset

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Dear Friends

India is home to one of the most vibrant startup ecosystems with close to 8000 tech startups, making it the 2nd largest startup ecosystem in the world. Hence, innovation and entrepreneurship is the emerging focus area that is being aggressively promoted to give fillip to the Indian economy. Ministry of Electronics & Information Technology (MeitY), Government of India is leading and facilitating a gamut of Innovation and IPR related activities across the country towards expansion of this ecosystem.

In order to facilitate MeitY's vision of promoting technology innovation, start-ups and creation of Intellectual Properties, a nodal entity called 'MeitY Start-up Hub' (MSH) has been setup under its aegis. MSH will act as a national coordination, facilitation and monitoring centre that will integrate all the incubation centres, start-ups and innovation related activities of MeitY. With an aim to encourage innovation in startups especially in the domains of healthcare, agriculture, automobiles, energy among others, MeitY had setup the Centre of Excellence (CoE). The Testing and Research lab is a unique offering from MSH where startups can test their prototypes and products and thereafter validate it. These labs will also help support early developmental phase of technology initiatives and transform ideas into reality.

Researchers at the Fraunhofer Institute for Material and Beam Technology IWS in Dresden have developed a new production process with the aim of efficient and environmentally friendly future battery production. They coat the electrodes of the energy storage cells with a dry film instead of liquid chemicals. This simplified process saves energy and eliminates toxic solvents. A Finnish company is currently successfully testing the new IWS technology in practice.

Better and more cost-efficient production methods for energy storage are increasingly in demand, especially in Germany: All major automobile manufacturers have launched ambitious electric vehicle programs that will ensure a sharp rise in demand for batteries. So far, German companies have been purchasing the cells for this purpose in Asia. There are two main reasons driving this trend: Asian technology groups have many years of experience in the mass production of battery cells and a lot of energy is consumed in these processes. Production at locations with high electricity prices, such as Germany, is, therefore, very high-cost.

Europe's biggest 3D mixed reality laboratory is located in Magdeburg. Four meters high and sixteen meters in diameter, the Fraunhofer Institute for Factory Operation and Automation IFF's Elbedome resembles a hemisphere. It affords companies the opportunity to bring models of machines, systems, factories and even entire cities to life with impressive realism. We reproduce an interesting interview from Fraunhofer Media Files of Elbedome manager Steffen Masik who focused on the lab's distinctive features.

As Hong Kong gets ready to showcase tech-savvy products, innovations, robotics, AI and Startups during the twin electronics shows in Hong Kong tech enthusiasts from around 100 + countries and regions will try to update their knowledge as well as look out for business opportunities, tie-ups, investments etc. With around 4,300 exhibitors from across the globe close to 1,00,000 buyers from around 100 + countries and regions the shows are all set to create new records. The 39th HKTDC Hong Kong Electronics Fair (Autumn Edition) and 23rd electronicAsia will be held concurrently at the Hong Kong Convention and Exhibition Centre from 13-16 October 2019.

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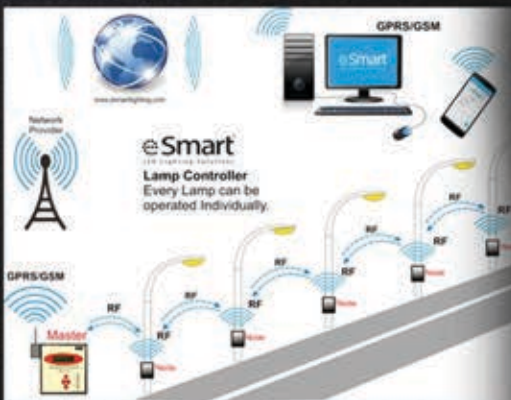
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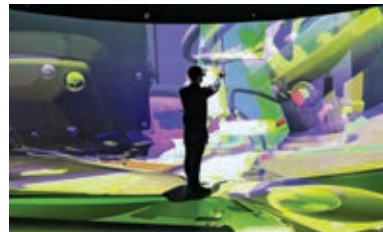Tel: +91 2222043085 / 89, info@esmartlighting.com, , www.esmartlighting.com

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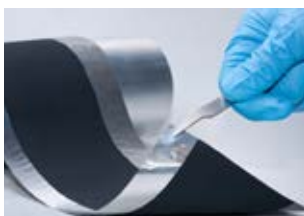
MeitY Start-up Hub:
Paving the way for innovative start ups

India is home to one of the most vibrant startup ecosystems with close to 8000 tech startups, making it the 2nd largest startup ecosystem in the world. Hence, innovation and entrepreneurship is the emerging focus area that is being aggressively promoted to give fillip to the Indian economy. Ministry of Electronics & Information Technology (MeitY), Government of India is leading and facilitating a gamut of Innovation and IPR related activities across the country towards expansion of this ecosystem.

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National Policy on Software Products - 2019

The Indian IT Industry has been predominantly a service Industry. However, a need was felt to move up the value chain through technology oriented products and services. Presently the global Software Product industry is estimated to be at USD 413 billion out of which India's share is just USD 7.1 billion including USD 2.3 billion as exports. In addition, import of software products is pegged at USD 10 billion. Hence, India is a net importer of software products. Therefore it is prudent to develop a conducive software product ecosystem to transform a predominantly service oriented Indian IT/ITeS industry into a technology oriented products and service hub.

For the holistic growth of the IT industry, the Union Cabinet has approved the National Policy on Software Products – 2019 on February 28, 2019 that would synergise the efforts of the Government, Academia and Industry to create a robust Software Product ecosystem. It would be the germinating ground for a large number of software product startups, encourage R&D and innovation, open up multitude of opportunities, leverage access to capital and help build and improve the domestic demand so as to develop India as a Software Product Nation. Through this Policy intervention, the Software Product industry is estimated to grow at a CAGR of ~40% so as to reach USD 70-80 billion by 2025 and generate direct and indirect employment for 3.5 million people by 2025.

MeitY Supported Incubation Centres

Recognizing the importance of technology incubation, MeitY has facilitated setting up of technology incubation centres with strong Industry–Academia–Government linkages and providing necessary facilities to budding entrepreneurs at different institutions of higher learning and R&D institutions across India. The initiatives include policy measures, infrastructural support, entrepreneurial training, IPR facilitation and creation of an overall framework conducive for technology incubation.

These Incubation Centers are providing a host of services to startups and facilitating necessary linkages congenial for their survival and growth. The centres also network with Angel Investors and Venture Capitalists to provide mentoring and financial support, eventually helping them to mature over the stipulated period and graduate successfully. In most of the cases the involvement of the faculty of the institute in the technology start-up activity reinforces teaching and research, strengthens linkages between education and industry and also better aligns education to meet market requirements. Establishment of these Technology Incubation Centres would enable indigenous development of ICT solutions in the long run.

Centre of Excellences

With an aim to encourage innovation in startups especially in the domains of healthcare, agriculture, automobiles, energy among others, MeitY had setup the Centre of Excellence (CoE). The vision of the CoE is to enable India as an innovation hub for emerging technologies such as Internet of Things (IoT). The end to end solutions developed at the Coe will consist of innovation, standardization, realization of prototype/products before

deployment of the IoT devices in the public domain/ infrastructure and support various government initiatives on IoT solutions for country specific needs in terms of water, energy, agriculture, health, security and privacy of data. These are being setup in PPP model with contribution from MeitY, State Governments and rest from Industry.

As part of the Digital India initiative, MeitY in partnership with NASSCOM had initiated a program to setup Centre of Excellences in IoT throughout the country. Centre of Excellence (CoE) on Internet of Things (IoT) is being executed jointly by

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ERNET India and NASSCOM in Public–Private partnership (PPP) mode. The first is operational at NASSCOM Bengaluru. The second such inintiative after Bengaluru has been now become operational at Gurugram, Haryana. Three more centres are in the process of being setup. The centre is setup at the HARTRON Innovation centre in Gurugram.

At IIT Gandhinagar in partnership with NASSCOM, the Centre will create the necessary impetus for boosting an ecosystem conducive for the development of IoT in Gujarat and a hub for providing digital solutions for Industries 4.0 to various stakeholders.

Centre of Excellence in Tactile Graphics, IIT Delhi proposes to design and produce tactile diagrams for persons with visual impairment. Centre of Excellence in Tactile Graphics has developed and demonstrated the capability for end-to-end production of tactile diagrams for the persons with visual impairment.

Facilities for Start Ups
Testing and Research Lab

The Testing and Research lab is a unique offering from MSH where startups can test their prototypes and products and thereafter validate it. These labs will also help support early developmental phase of technology initiatives and transform ideas into reality. These are mainly at Centre for Development of Advanced Computing (C-DAC) a premier R&D organization for R&D in IT, Electronics and associated areas. Different areas of C-DAC, had originated at different times, many of which came out as a result of identification of opportunities. Dedicated to the furtherance of competent research and development in the firmament of Electronic Materials, the Centre for Materials for Electronics Technology (C-MET) functions as an autonomous scientific society. Besides augmenting core competence, C-MET envisions attainment of self-sufficiency in the sphere of Electronic materials, components and devices to cater to India's strategic and industrial- applications, exploiting indigenous resources of raw materials.

NIELIT, New Delhi is an IT corporate with clear-cut strategies and its various operations are aimed at giving its customers a total package of IT solutions and products. The prime objective of NIELIT Centre, Delhi is to create skilled manpower in the areas of Electronics, Computer Science, Information Technology and other related disciplines for making available industry ready professionals as well as to promote e-learning.

SAMEER was set up as an autonomous R & D laboratory at Mumbai with a broad mandate to undertake R & D work in the areas of Microwave Engineering and Electromagnetic Engineering Technology. It is an offshoot of the special microwave products unit (SMPU) set up in 1977 at the Tata Institute of Fundamental Research (TIFR), Mumbai.

Software Technology Parks of India (STPI), is an Autonomous Society with the objective of encouraging, promoting and boosting the Software Exports from India. Software Technology Parks of India maintains internal engineering resources to provide consulting, training and implementation services. 6Services cover Network Design, System Integration, Installation, Operations and maintenance of application networks and facilities in varied areas.

ERNET India is an autonomous scientific society having one of the largest nationwide terrestrial and satellite network with 5 points of presence located at the premier academic and research institutions in major cities of the country. Focus of ERNET India is not limited to just providing connectivity, but to meet the entire needs of the academic and research institutions by providing consultancy, project management, training and other value added services such as web hosting, e-mail services, video conferencing, domain registration, CUG services.

Venture Capital/Angel Investors

MSH offers a veritable platform to budding startup entrepreneurs to help connect with Angel Investors/VCs and help them expand. MSH's unique platform is for technology startups that are typically in nascent phase. Facilitating investors to invest in these startups will allow them to develop and create a thriving ecosystem in the process.

IPR

With the growth of the IT industry as well as other technical sectors an urgent need is felt to protect the IPR generated out in India. Scientists and scholars alike need to be able to protect their

ideas and ensure that thier Intellectual property is protected. The vision is to place India among the Intellectual Superpowers in the world; To protect the rich IPR generated out by our country; To proliferate the Intellectual Property Rights across the nation and spread awareness to protect their violation by any means, as they play an important role in the economic, social and cultural development of any country; To harness the Intellectual Property assets of the country and to increase awareness of the problems and dangers associated with intellectual property right violations.

Industry Connect

In order to facilitate MeitY's mission of building a conducive innovation and startup ecosystem and breaking away with the culture of working in silos, MeitY Startup Hub (MSH) is getting into partnerships with various technology innovation stakeholders across organizations. These initiatives are aimed at connecting the startups with the industry for mutual benefit and gaining access to international markets.

As part of the initiatives, an enabling ecosystem consisting of mutual soft-landing platforms for start-ups from India and other countries will also be explored. It would be a win-win situation for both startups and industries. For startups, organizations would be potential customers whereas organizations stands to benefit as most of these start-ups are working in cutting edge technologies such as AI / ML, blockchain, internet of things, deep learning etc.

MSH through these partnerships aims to pave the way for a strong economy built on the twin engines of innovation and disruption.

Our Partners:
Qualcomm:

MSH supported startups to be a part of Qualcomm Design for India Challenge (QDIC) 2019. Qualified start-ups may be invited for the main QDIC pitch session subject to the standard entry and qualification processes

Qualcomm to support and mentor page stage startups to ramp up by Technology-Support, Hardware-Partner-Introductions

MSH and Qualcomm to support IP training workshops for tech startups

Confederation of India Industry (CII):

MSH supported start-ups in electronics and IT sector will be brought under the ambit of CII's Corporate-Start-up Business Connect Platform, which will aid them to connect with the industry for mutual benefits and accessing global markets

MSH and CII will work together to create an ecosystem for inviting international start-ups to explore the Indian market on affordable terms. These offshore startups will be offered free/near free space for a certain period of time in a city of their choice in India or inside a co-working arrangement. The idea is to allow the foreign firms to fine-tune their products as per the demands and standards of the Indian market. Similar soft-landing opportunities will be rendered to Indian start-ups in other countries too

The Hongkong & Shanghai Banking Corporation (HSBC):

HSBC will collaborate with MSH supposed startups to help them understand the requirements from the perspective of banking and financial services. This will help the startups in understanding the regulatory, consumer and technology aspects of transitioning into a digital economy with impetus for financial inclusion. It will also enable connects to VC funds known to them, who wish to invest in startups

Indian Electronics & Semiconductor Association (IESA):

IESA & MSH will co-host programs such as hackathons & makeathons to support startups in the Electronic System Design & Manufacturing (ESDM) segment

IESA & MHS to promote pairing of startups with the Electronics & IT industry purely on commercial basis with business & strategic interests

PHD Chamber of Commerce:

MSH and PHDCCI will together work in strengthening the incubation ecosystem that will enable adoption of startups in the Electronics & IT sectors by the industry throughout the country

PHDCCI will assist MSH in creating a central mentor pool for the benefit of the MSH Incubators for adding value to their start-up ventures

PHDCCI to design, develop and execute programmes for the training of Managers /Professionals working in MSH supported incubators/CoEs

US-India Strategic Partnership Forum (USISPF):

MSH and USISPF will partner to help startups fast-track their internal development through intensive mentorship which will help startups grow faster

USISPF to help MSH supported startups meet with domain experts, VCs, accelerators, incubators, industry associations and large companies to help them scale up their business

MSH and USISPF to co-create programs on societal problems. MSH and USISPF supported start-ups to get a platform to work together and commercialize their innovation.

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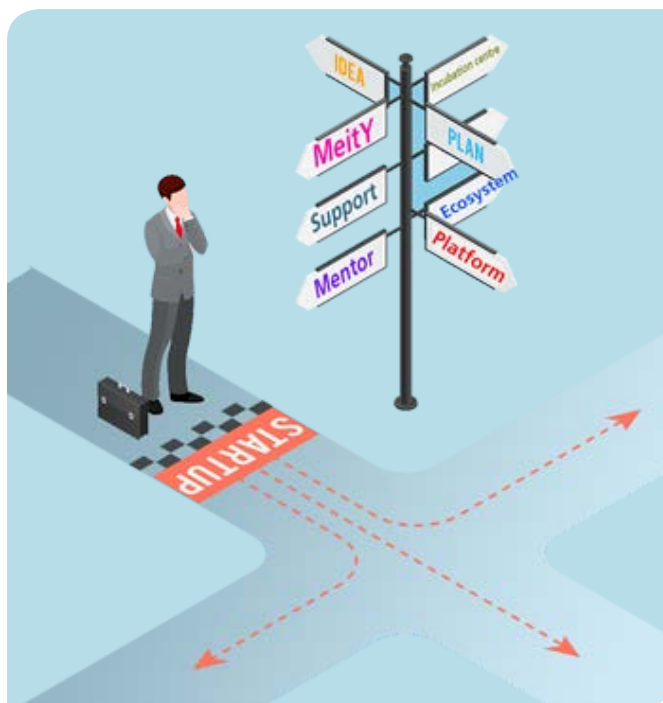
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Cited in Gartner's Magic Quadrant for International Retail Core Banking.
13 November 2014

Included in Forrester's Global Banking Platform Deals 2014 report as a solid player

Cutting-edge VR in Magdeburg

Europe`s biggest 3D mixed reality laboratory is located in Magdeburg. Four meters high and sixteen meters in diameter, the Fraunhofer Institute for Factory Operation and Automation IFF`s Elbedome resembles a hemisphere. It affords companies the opportunity to bring models of machines, systems, factories and even entire cities to life with impressive realism. *We reproduce an interesting interview from Fraunhofer Media Files of Elbedome manager Steffen Masik who focused on the lab's distinctive features.*

The Elbedome provides space sufficient for a team of industrial planners or can be used as a marketing tool that enables as many as thirty visitors to experience virtual environments at the same time.
© Fraunhofer IFF

This unique simulation lab reopened last May following extensive upgrading (see the box entitled Immersing in virtual worlds). Mr. Masik, what are the new features of the revamped visualization system?

Rather than just the panorama, the floor can now be used as a projection surface, too. Virtual objects can be introduced in the space and linked with real elements in the Elbedome. The new stereoscopic projection system lets you perceive models in three dimensions. And the Elbedome now features considerably brighter, higher-definition projections and state-of-the-art computer equipment for imaging and simulation.

Can you describe how this technology works? What are the distinguishing features of 3D mixed reality applications?

Twenty-five high-resolution daylight stereo projectors project images on the floor and panorama and even other objects into space. An automated calibration system helps us quickly adjust to changed projection parameters. Mixed reality applications connect real objects such as workstations, robots or controllers with virtual elements, for instance a machine, system or an entire surrounding factory. A high-precision tracking system enables ergonomic testing of real or virtual prototypes of workstations, systems or machines.

What does the Elbedome do best?

The Elbedome has a panoramic and floor projection surface of with more than 450 m2. These huge dimensions make it particularly well suited for displaying large objects such as machines, systems, factories or entire cities. Moreover, the size of the space also allows projecting objects into space as holograms, thus giving users the sensation of being in the midst a virtual world. The Elbedome provides space sufficient for a team of industrial planners or can be used as a marketing tool that enables as many as thirty visitors to experience virtual environments simultaneously.

The Elbedome's panoramic and floor projection surface of over 450 m2 make it particularly well suited to display large objects such as machines, systems, factories, and entire cities. Manufacturers use these large-scale visualizations to assess the status of their plans and expedite decision-making.
© Fraunhofer IFF

What do companies typically use these virtual worlds for?

Manufacturers use virtual realities to assess the status of their plans, expedite decision-making, and support training, communication and marketing actions. Designing a factory, for instance, is a highly complex process. Different professionals collaborate interdisciplinarily and have to understand each other. Virtual realities help combine different types of data and unify different points of view.

Immersing in virtual worlds

The Elbedome at the Fraunhofer IFF's Virtual Development and Training Centre (VDTC) was reopened in May 2018. After over ten years of use in R&D for numerous companies and research organizations, the technology had to be upgraded. Over € 2.5 million were invested in its renovation.

Virtual contents are displayed in high-definition holograms at the Elbedome on a 360-degree panoramic and floor projection surface of over 450 square meters. These huge dimensions make the system well suited for displaying large objects on a scale of 1:1. Groups of up to thirty people can immerse in virtual worlds simultaneously.

Twenty-five advanced projectors deliver highest quality images. A panoramic screen gives viewers the impression that they are in the midst of a virtual world. Various devices such as infrared tracking systems are available for interaction.

The Elbedom is simultaneously a discovery, learning and creative space and can improve communication with clientele effectively. Staff can be trained effectively and experts can share experiences in the virtual training environment.
© Fraunhofer IFF

What is the advantage of this system and how does it benefit your clients?

Our clients can use the Elbedome as a discovery, learning and creative space and thus improve communication with their clientele effectively, hold unforgettably unique promotional events, train staff effectively, and share experts' experiences. We use it to enable regional businesses in particular to set themselves apart from their competitors and gain more than just regional visibility through innovative planning methods, end-to-end digital transformation and sustainable marketing.

You are working on challenges of the future in the mixed reality lab. What cutting-edge topics are you addressing in particular? What technology and application developments are you focusing on?

Fraunhofer IFF is primarily researching solutions that will enable companies to organize their manufacturing lines more reliably, more efficiently and more sustainably and thus developing work systems of the future. As an applications lab, the Elbedome facilitates this research and provides a one-of-a-kind interface to industry research partners. The Elbedome focuses on the processing and visualization of large design and simulation data sets as well as real-time manufacturing data and on intuitive interaction with the resulting cyber-physical systems. Current architectural, urban planning and medical applications additionally demonstrate that the uses for the Elbedome go far beyond the industrial sector and are virtually boundless.

Who may rent the lab? Who uses it most?

We are happy to make the Elbedome available to any interested company by the hour or even for longer periods. On the one hand, we can use the Elbedome to impressively convey the benefits of digital transformation and Industrie 4.0 tools to companies. On the other hand, companies can bring their own data sets with them, of course, and use the Elbedome for internal and external communication. Naturally, the Elbedome is also available to researchers, especially those from local universities and colleges, and to Fraunhofer colleagues for their industry and research projects.

What development projects are you currently pursuing at the Elbedome?

On the one hand, we are constantly developing our service portfolio further and thus the range of functions as well. In various projects with industry partners, we are identifying design and operating data sets that will be interesting for the Elbedome in the future as well as ways to link and visualize them with other information. On the other hand we are also studying how individuals can work in such environments efficiently and for lengthy periods without getting nauseous or dizzy, for instance.

The Virtual Development and Training Centre VDTC was designated a European Digital Innovation Hub in 2018. What opportunities does it offer companies in Saxony-Anhalt?

The VDTC was designated a DIH because we have been promoting digital transformation in manufacturing companies in the region for years, are represented with our work in the most important networks and initiatives, and have connections to the most important stakeholders. Our solutions, tools, research specializations and, not least, the Elbedome make us the go-to source of support and contacts for digital transformation in Saxony-Anhalt. Admission to the ranks of European DIHs is enabling us to raise our activities, which we have primarily pursued for companies on a regional level, to the European level. We have come to realize in recent months that our designation as a DIH means a bit more visibility for us. This now has to be translated into benefits for companies in the region. The DIH network enables us to afford companies access to new partners and new knowledge, which they may not be able to find locally. On the other hand, we are also able to work with industry partners and serve as the liaison for inquiries from abroad in order to advance the internationalization of regional companies, especially innovative SMEs. The latter has particularly high priority in Saxony-Anhalt. We are collaborating closely with the Ministry of Economic Affairs, Science and Digitalisation to expand the DIH's activities and promote entrepreneurship and start-ups with other partners in the state.

The stereoscopic projection system makes it possible to perceive virtual worlds in the Elbedome in three dimensions. Holographic representation gives users the sense of being in the midst of the projected images.
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AI & Voice Recognition zones to be launched @HKTDC

As Hong Kong gets ready to showcase tech-savvy products, innovations, robotics, AI and Startups during the twin electronics shows in Hong Kong tech enthusiasts from around 100 + countries and regions will try to update their knowledge as well as look out for business opportunities, tie-ups, investments etc. A preview of the shows.

Tech enthusiasts from across the globe will converge for 4 days in Hong Kong, as has been the practice for several years, to attend the twin electronics shows in Hong Kong. With around 4,300 exhibitors from across the globe close to 1,00,000 buyers from around 100 + countries and regions the shows are all set to create new records.

The 39th HKTDC Hong Kong Electronics Fair (Autumn Edition) and 23rd electronicAsia will be held concurrently at

the Hong Kong Convention and Exhibition Centre from 13-16 October 2019. The two fairs will gather more than 4,300 exhibitors from across the globe, showcasing a wide variety of intelligent products, innovative start-up ideas and electronic components.

Hong Kong Electronics Fair (Autumn Edition) is organised by the Hong Kong Trade Development Council (HKTDC), while electronicAsia is jointly organised by the HKTDC and MMI Asia Pte Ltd.

Benjamin Chau, Deputy Executive Director, HKTDC, said "Hong Kong's electronics industry is the largest merchandise export earner of the territory, accounting for 68% of Hong Kong's total exports in 2018. As the world's largest electronics marketplace, the Autumn Electronics Fair and electronicAsia attracted close to 87,000 buyers from 139 countries and regions 2018. Held concurrently under one roof, the two fairs will gather electronics products, start-ups, components and technologies to create more business opportunities between exhibitors and buyers."

Hong Kong Electronics Fair (Autumn Edition) The highlighted Tech Hall will return to showcase tech-savvy products in thematic zones: 3D Printing, Robotics & Unmanned Tech, Smart Tech, Virtual Reality and Startup. As Artificial Intelligence (AI) has become more than a buzzword in recent years, a new zone AI

& Voice Recognition zone will be launched, demonstrating automation and intelligent products.

The Startup zone will feature around 150 international start-ups to present their innovations ranging from Apps, smart home products, wearable electronics, Internet of Things (IoT), heath electronics and more. A series of events will be arranged to provide an ideal platform for startups to present ideas, which include pitching, "Startup, Smart Launch", sharing, mentoring and investment matchmaking sessions.

The newly launched Wireless Technologies zone will gather wireless and portable products including wireless charger and Bluetooth speakers. 3D Printing zone will feature the latest 3D printers, filament and other materials. Another returning zone is Robotics and Unmanned Tech, presenting the latest models of aerial cameras, industrial and home-used robots, electric scooters and more. Smart Tech zone will showcase electronic devices featuring IoT applications for modern living. Virtual Reality zone will return to feature a range of VR, Augmented Reality (AR) and Mixed Reality (MR) products and related technology.

A Hong Kong exhibitor will present Facial Recognition Wi-Fi Doorbell. It is a personal gatekeeper to a connected home. It can recognise faces of family members and friends, play custom greetings and record voice memos for your guests.

Another Hong Kong exhibitor will showcase Live Streaming Camera Glasses, which supports long time recording with full HD quality, and live streaming function through its mobile application. The in-built camera is tiltable to support different scenario, to

Some of the Highlighted Products:
HKTDC Hong Kong Electronics Fair (Autumn Edition)
Facial Recognition Wi-Fi Doorbell - Exhibitor: Xingtel (Hong Kong) Company - Booth: 1A-F02
Live Streaming Camera Glasses - Exhibitor: Engine (Hong Kong) Co., Limited - Booth: 3CON-062

electronicAsia
Molded High Current Power Inductor - Exhibitor: Coilmaster Electronics Co Ltd - Booth: 5F-B09
ERD7 Series Rotary Switch - Excel Cell Electronic Co Ltd - Booth: 5F-D17

allow users free to try different video shooting and live angles.

The popular Hall of Fame will continue to be a spotlight of the fair, featuring stylish products from more than 560 international renowned brand names including SKROSS, Bourgini, GP Batteries, and ODOYO. Other themed zones include i-World, Wearable Electronics, Healthcare Electronics, Audio Visual Products, Personal Electronics and many more.

electronicAsia

Held concurrently with the Autumn Electronics Fair, electronicAsia creates an unrivalled platform for suppliers of electronic components and production technologies to showcase their products to international buyers.

Featured zones include Power Supplies which will present various types of batteries, accessories, solar photovoltaic components and technologies. Printed Circuit Board & EMS zone will display printed circuit board and related services including design, manufacture, test and more. World of Display Technology zone will continue to house exhibitors of visualization technologies. Others include Electronic Components and Keyboards & Switches. To cater to the latest sourcing trend, the fair will also showcase the essential elements of "automation" including a range of sensors, wireless modules and its technologies behind.

The fair gathers all types of electronic components which include Molded High Current Power Inductor presented by a Taiwanese exhibitor. It offers extremely low DCR and ultra-low AC losses for the highest efficiency across a range of frequencies, making them ideal for IoT and portable device applications.

Symposium on Innovation & Technology explores 5G technology

During the twin fairs, there will be a series of seminars and forum for exhibitors, buyers and visitors to share the latest trends and development of the electronics industry. Symposium on Innovation & Technology will be staged on the second day of the fairs (14 October) under the theme of "Intelligent Connectivity: 5G and Beyond". International speakers from worldwide tech giants will share their forward-looking insights on the latest 5G network development and how this will extend to other area of technology advancement.

Other events include a key forum on "Blockchain in Industrial IoT – The next big thing?" on 13 October and Hong Kong Electronic Forum to discuss advanced robotics, MicoLED trend and application for electronics products on 15 October.

Fair Dates: 13-16 October 2019
Venue: Hong Kong Convention and Exhibition Centre
1 Expo Drive, Wan Chai, Hong Kong (Harbour Road Entrance)
Admission: Trade only. (Admission - HK$100)
Organiser: HKTDC and MMI Asia Pte Ltd

Events worth attending

Market Potential in Brazil, Canada, Slovakia & USA
Time: 11:30am – 12:35pm
Venue: The Forum, Hall 1D

Start-up Event: Media Pitch Day
Time: 12pm – 2pm
Venue: Innovation Hub, Convention Hall

Product Demo & Launch Pad
Time: 2pm-5:10pm
Venue: The Forum, Hall 1D

Blockchain in Industrial IoT – The next big thing?
Time: 2:30pm – 4:30pm
Venue: The Stage, Hall 5FG

Start-up Event: First Round Capital
Time: 2:30pm – 3:30pm
Venue: Innovation Hub, Convention Hall

Startup Event: Startup Smart Launch
Time: 10am – 10:30am
Venue: Innovation Hub, Convention Hall

Startup Event: Female Entrepreneurship
Time: 3:30am – 4:30pm
Venue: Innovation Hub, Convention Hall

Jumpstart Magazine Presents: Startup, Smart Launch
Time: 11:30am – 11:45am
Venue: Innovation Hub, Convention Hall

Testing, Certification and Inspection Services
Time: 2pm – 3pm
Venue: The Forum, Hall 1D

e-Tech & i-future (Robotic Performance)
Time: 2pm – 2:30pm
Venue: Grand Hall Stage, Level 3

New light source brings freedom of design and added safety

Success in the increasingly competitive automobile market is reserved for those who combine well-engineered products with attractive design, for example through the perfect integration of headlamps. Fraunhofer researchers have developed a new lighting technology that gives designers more freedom to create vehicles with unconventional styling and also provides additional benefits to drivers and auto manufacturers alike.

The Fraunhofer Institute for Applied Optics and Precision Engineering IOF in Jena has developed a new generation of vehicle lights which not only exceeds legal and automotive-industry requirements for illumination performance and functionality, it is also more efficient, more compact and significantly more flexible than current systems as regards their location on the vehicle.

200,000 micro-optical elements per headlamp

At this year's LASER World of PHOTONICS trade fair, scientists from Fraunhofer IOF will present the second functional prototype of a segmented high-beam unit which minimizes light scatter. The unit is based on a multi-aperture projector which

Segmented automotive LED high-beam unit realized as a micro-optical, irregular fly's eye condenser. Two identical modules assembled with 1.5° rotation to one another. © Fraunhofer IOF

has been in continuous development for several years. 200,000 micro-optical elements focus the light optimally in the vehicle's direction of travel.

The segments can be deactivated as necessary, either individually or in groups, without time delay. Combined with modern vehicle sensor technologies, this makes it possible to effectively prevent the high beam from blinding oncoming motorists. In addition, the design requires significantly less installation space compared to conventional systems.

Reduced glare

Not only can the light be dimmed specifically for oncoming traffic, it is even possible to protect pedestrians and e.g. cyclists without lights from being impeded by glare. This increases the level of safety for all road users.

"We're developing the headlamp as part of the WISA project SSL – StructuredSpotLight – with Fraunhofer-internal funding. In-house research projects with commercial relevance enable cross-

Segmented automotive LED high-beam unit realized as a micro-optical, irregular fly's eye condenser. The deactivated segment prevents glare from blinding oncoming traffic. © Fraunhofer IOF

institute precompetitive research and lay the foundation for subsequent industry development projects," says Stephanie Fischer, research associate in the Micro-Optical Systems department at Fraunhofer IOF.

The project relied on a group of advisors from automotive manufacturers and component suppliers. They were thus able to provide input on the desired parameters of the high and low beam light as well as on the mechanical design requirements. Participants in the group include such renowned brand names as AUDI, HELLA, Trilux and OSRAM.

Function follows design

The automotive manufacturers will profit in coming years from considerably greater creative freedom when it comes to designing headlamps. Designers are thus completely free to decide whether to install the headlamps on the outer edges of the vehicle's nose, as is usually done, or as a narrow strip across its center.

This is because the system enables a very small installation depth and provides much greater freedom in terms of dimensions and shape. "The headlamps no longer have to be rectangular: the designer can choose any other shape desired," says Stephanie Fischer. "Space requirements of larger optical units limited design possibilities in the past."

In addition, the new system increases the LED light yield. For example, when set to low beam only 35 percent of the light yield is lost, an excellent value for LED headlamps. This increase in efficiency also improves the energy balance in the vehicle and raises acceptance levels for automotive applications.

The high-beam unit consists of two modules, each containing seven individually controllable LED clusters. A total of four collimation lenses direct the light from the LED clusters onto two tandem lens arrays. These micro-optical elements handle the distribution of the light from the individual LEDs. Thousands of micro-lenses precisely guide the light to the respective illumination segments. Each segment can be switched on or off in a fraction of a second by individually controlling the total of 24 LEDs.

Production process developed in-house

For the first time, rectangular polymer lenses of various dimensions were used to achieve more precise light modeling. The

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  - Robotics & Unmanned Tech
  - Smart Tech
  - Startup
  - Virtual Reality
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  - Healthcare Electronics
  - Home Appliances
  - i-World
  - Wearable Electronics

Value-added Activities

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- Networking Events
- Seminar Series
- Product Demo & Launch Pad

Concurrent Exhibition: electronicAsia

Organised by the HKTDC and MMI Asia Pte Ltd, the fair is a pre-eminent international electronics marketplace for components and production technologies, including display technology, electronic components, keyboard & switches, power supplies, printed circuit board & EMS, test and inspection equipment, wireless & sensor technologies, and more.

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Micro-optics for automotive headlamp. © Fraunhofer IOF

smallest variant measures 0.045 mm x 0.180 mm. Here Fraunhofer IOF developed its own new production method for rectangular lenses, the "High Five" grayscale lithography system. High Five is not only capable of producing extremely fine microstructures, it can also create the relatively large depth of profile (up to 100 μm) needed to optimally exploit the available luminance of the LEDs.

Fraunhofer IOF has now successfully realized the first prototype of a low-beam headlamp module. Once all the components have been completely developed, 8 000 micro-lenses will ensure optimum visibility at night and in poor weather conditions.

Machine learning for sensors

Today microcontrollers can be found in almost any technical device, from washing machines to blood pressure meters and wearables. Researchers at the Fraunhofer Institute for Microelectronic Circuits and Systems IMS have developed AIfES, an artificial intelligence (AI) concept for microcontrollers and sensors that contains a completely configurable artificial neural network. AIfES is a platform-independent machine learning library which can be used to realize self-learning microelectronics requiring no connection to a cloud or to high-performance computers. The sensor-related AI system recognizes handwriting and gestures, enabling for example gesture control of input when the library is running on a wearable.

A wide variety of software solutions currently exist for machine learning, but as a rule they are only available for the PC and are based on the programming language Python. There is still no solution which makes it possible to execute and train neural networks on embedded systems such as microcontrollers. Nevertheless, it can be useful to conduct the training directly in the embedded system, for example when an implanted sensor is to calibrate itself. The vision is sensor-related AI that can be directly integrated in a sensor system. A team of researchers at Fraunhofer IMS has made this vision a reality in the form of AIfES (Artificial Intelligence for Embedded Systems), a machine learning library programmed in C that can run on microcontrollers, but also on other platforms such as PCs, Raspberry PI and Android. The library currently contains a completely configurable artificial neural network (ANN), which can also generate deep networks for deep learning when necessary. An ANN is an attempt to mathematically simulate the human brain using algorithms in order to make functional contexts learnable for the algorithms. AIfES has been optimized specifically for embedded systems.

"We've reduced the source code to a minimum, which means the ANN can be trained directly on the microcontroller or the sensor, i.e. the embedded system. In addition the source code is universally valid and can be compiled for almost any platform. Because the same algorithms are always used, an ANN generated for example on a PC can easily be ported to a microcontroller. Until now this has been impossible in this form with commercially available software solutions," says Dr. Pierre Gembaczka, research associate at Fraunhofer IMS.

Protection of privacy

Another uniquely qualifying feature of the sensor-related AI from Fraunhofer IMS: until now artificial intelligence and neural networks have been used primarily for image processing and speech recognition, sometimes with the data leaving the local systems. For example, voice profiles are processed in the cloud on external servers, since the computing power of the local system is not always adequate. "It's difficult to protect privacy in this

AIfES demonstrator for handwriting recognition. Numbers written by hand on the PS/2 touchpad are identified and output by the microcontroller. © Fraunhofer IMS

process, and enormous amounts of data are transmitted. That's why we've chosen a different approach and are turning away from machine learning processes in the cloud in favor of machine learning directly in the embedded system. Since no sensitive data leave the system, data protection can be guaranteed and the amounts of data to be transferred are significantly reduced," says Burkhard Heidemann, "Embedded Systems" group manager at Fraunhofer IMS. "Of course it's not possible to implement giant deep learning models on an embedded system, so we're increasing our efforts toward making an elegant feature extraction to reduce input signals." By embedding the AI directly in the microcontroller, the researchers make it possible to equip a device with additional functions without the need for expensive hardware modifications.

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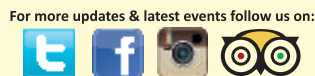
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There are practically no limits to the potential applications of AIfES: For example, a wristband with integrated gesture recognition could be used to control indoor lighting. And not only can AIfES recognize gestures, it can also monitor how well the gestures have been made. Exercises and movements in physical therapy and fitness can be evaluated without the need for a coach or therapist. Privacy is maintained since no camera or cloud is used. AIfES can be used in a variety of fields such as automotive, medicine, Smart Home and Industrie 4.0.

Decentralized AI

And there are more advantages to AIfES: The library makes it possible to decentralize computing power for example by allowing small embedded systems to receive data before processing and pass on the results to a superordinate system. This dramatically reduces the amount of data to be transferred. In addition, it's possible to implement a network of small learning-capable systems which distribute tasks among themselves.

AIfES demonstrator for handwriting recognition. All functions have been integrated on the Arduino UNO, which reads the sensor values of the touchpad, performs number recognition and outputs the result to the display. © Fraunhofer IMS

Reducing data

AIfES doesn't focus on processing large amounts of data, instead transferring only the data needed to build very small neural networks. "We're not following the trend toward processing big data; we're sticking with the absolutely necessary data and are creating a kind of micro-intelligence in the embedded system that can resolve the task in question. We develop new feature extractions and new data pre-processing strategies for each problem so that we can realize the smallest possible ANN. This enables subsequent learning on the controller itself," Gembaczka explains.

The approach has already been put into practice in the form of several demonstrators. If for example the research team implemented the recognition of handwritten numbers on an inexpensive 8-bit microcontroller (Arduino Uno). This was made technically possible by developing an innovative feature extraction method. Another demonstrator is capable of recognizing complex gestures made in the air. Here the IMS scientists have developed a system consisting of a microcontroller and an absolute orientation sensor that recognizes numbers written in the air. "One possible application here would be operation of a wearable," the researchers point out. "In order for this type of communication to work, various persons write the numbers one through nine several times. The neural network receives this training data, learns from it and in the next step identifies the numbers independently. And almost any figure can be trained, not only numbers." This eliminates the need to control the device using speech recognition: The wearable can be controlled with gestures and the user's privacy remains protected.

Artificial Intelligence for Embedded Systems – AIfES.
© Fraunhofer IMS

Deep learning

AIfES currently contains a neural network with a feedforward structure that also supports deep neural networks. "We programmed our solution so that we can describe a complete network with one single function," says Gembaczka. The integration of additional network forms and structures is currently in development. Furthermore the researcher and his colleagues are developing hardware components for neural networks in addition to other learning algorithms and demonstrators. Fraunhofer IMS is currently working on a RISC-V microprocessor which will have a hardware accelerator specifically for neural networks. A special version of AIfES is being optimized for this hardware in order to optimally exploit the resource.

Economical energy storage for the electric car of tomorrow

Researchers at the Fraunhofer Institute for Material and Beam Technology IWS in Dresden have developed a new production process with the aim of efficient and environmentally friendly future battery production. They coat the electrodes of the energy storage cells with a dry film instead of liquid chemicals. This simplified process saves energy and eliminates toxic solvents. A Finnish company is currently successfully testing the new IWS technology in practice.

Better and more cost-efficient production methods for energy storage are increasingly in demand, especially in Germany: All major automobile manufacturers have launched ambitious electric vehicle programs that will ensure a sharp rise in demand for batteries. So far, German companies have been purchasing the cells for this purpose in Asia. There are two main reasons driving this trend: Asian technology groups have many years of experience in the mass production of battery cells and a lot of energy is consumed in these processes. Production at locations with high electricity prices, such as Germany, is, therefore, very high-cost.

No more toxic solvents – lower electricity costs

It is exactly this fact the Saxon Fraunhofer engineers want to change: "Our dry transfer coating process aims to noticeably reduce the process costs in electrode coating," emphasizes IWS project manager Dr. Benjamin Schumm. "Manufacturers can eliminate toxic and expensive solvents and save energy costs during drying. In addition, our technology also facilitates the use of electrode materials that are difficult or even impossible to process wet-chemically." But exactly these materials are needed for future batteries with higher energy density. "For all these reasons, we think that our technology can help to achieve internationally competitive battery cell production in Germany and Europe."

This is what the electrodes coated with the new dry transfer coating technology look like. Fraunhofer IWS process enables battery electrodes to be produced on a pilot scale without using toxic solvents.
© Fraunhofer IWS

Pilot plant successfully started in Finland

This potential is also seen by Fraunhofer's Nordic partners: The Finnish battery company "BroadBit Batteries", together with IWS, has commissioned a pilot plant in its Espoo factory, which coats electrodes with dry electrode material instead of wet pastes, as has been common in industry up to now. BroadBit uses it to produce new types of sodium ion batteries. "The demand for our technology is high, even in Germany," reports Benjamin Schumm. On a laboratory scale, the IWS can already coat electrode foil with a remarkable production speed of several meters per minute. In this respect the Dresden engineers can show the potential for

transferring the technology to the production scale.

Limits of classic wet chemistry

Until now, cell producers have mostly coated their battery electrodes in a complex wet-chemical process. First, they mix the active materials, intended later to release the stored energy, with additives to create a paste. In this process they add organic solvents, which are expensive and usually toxic. In order to protect operators and the environment, elaborate precautions for occupational safety and reprocessing are necessary. Once the paste has been applied to thin metal foils, a further expensive process step begins: Dozens of meter long heating sections dry the coated films before they can be further processed. This drying procedure usually causes high electricity costs.

Binding molecules form a cobweb

The new film transfer technology for dry electrode coating, on the other hand, operates without these ecologically damaging and expensive process steps: The IWS engineers mix their active material with binding polymers. They process this dry mixture in a rolling mill known as "calender". The shear forces in this system tear entire molecular chains out of the binder polymers. These "fibrils" join with the electrode particles as in a spider web. This provides the electrode material with stability. The result is a flexible dry electrode material layer. In the next step, the calender laminates the 100 micrometer thick film directly onto an aluminum foil, thus creating the battery electrode.
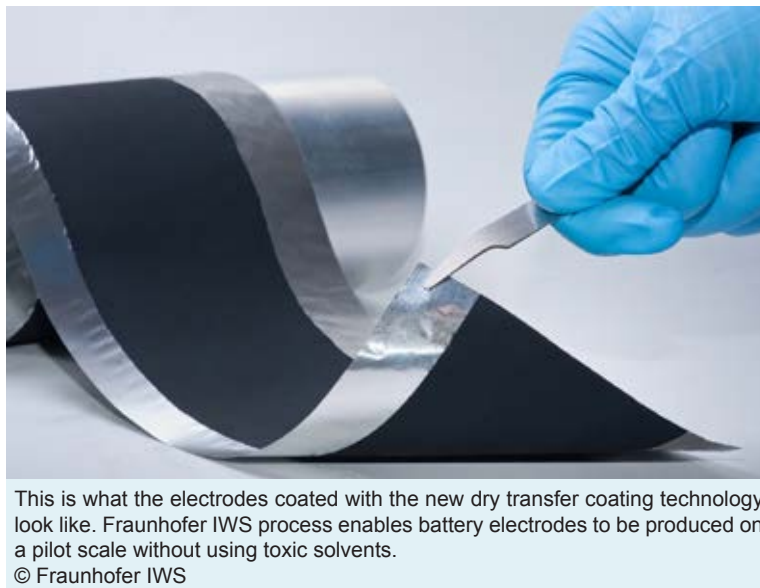
On the way to the solid state fireproof battery

"In this way, we are also able to process materials for new battery generations where classical processes fail," says Benjamin Schumm. These include, for example, energy storage systems that use sulfur as active material or solid-state batteries which employ ion-conducting solids instead of flammable liquid electrolytes. "These batteries will be able to store more energy in the same volume than today's lithium-ion batteries," says the IWS scientist with a view to the future. "However, these solid electrolytes can lose their functional properties in contact with solvents. A solvent-free coating process is significantly better qualified to produce these storage media." On the way of processing electrodes for all solid state batteries the researchers have reached one important milestone by applying their dry film technology using extremely low binder contents. They have recently published their results in ScienceDirect.

A Totally Pollution Free Clean Fuel

How nice it would be if your car can be charged in 3 minutes and it can run for 300 km in a single charge. The feasibility is not far.

As per WHO air pollution causes 2 million premature deaths worldwide and more than 50% are from developing world. So companies across the globe are thriving for better air quality through cleaner fuels.

So what's Clean Fuel - One which does not cause pollution and is also not injurious to health.

One company in India has taken the lead globally to develop a clean fuel

eSmart Technology, based in Mumbai has developed a technology to convert sludge into high calorific value fluid with minimum value of diesel and pure carbon from which a rechargeable battery could be made to run the vehicle. This sludge is around 12% of the refined oil and that gives us enough raw material stock.

How it works

This sludge is nothing but Hydrocarbon and we have been able to separate this sludge into hydrogen and carbon, whereby hydrogen comes in vapour form, hydrogen becomes pure refined oil product and the carbon in powder form with 5 micron size particles. The oil does not have any carbon and carbon does not have any oil. We are planning to utilise by depositing that on a film and make a capacitor which would act as a battery and this battery can be charged very fast as capacitor charging can be done instantly.

We have made a pilot plant which can convert 3 tons per day of tar sand into usable product. We are in the process of making 100 such plants which will give us total of 300 tons per day production. One ton of production will fetch us at least $ 1000 per tons if we sell our raw material that is liquid valuation at about $ 1 per liter in India and if we convert it to a rechargeable battery the value could go up to $ 7000 per ton. Therefore, it will give us a production of $ 21000 per day, per machine and with 100 such machines it will give us $ 2 million a day production that is around $ 600 million per year revenue.

Considering the above revenue with a unique technology without pollution and green technology, we can think of 20 times earnings and therefore which is valued at about $ 12 billion.

Canada and Venezuela – Excellent Partners

Tar sands or oil sands are a type of unconventional deposits of petroleum, which can be upgraded to synthetic crude oil. These occur naturally and are composed of a mixture of sand, clay and water that is saturated with an extremely viscous and dense form of petroleum.

Canada and Venezuela are the major hubs for tar sand. In smaller quantities they are also found in Kazakhstan and Russia.

Today tar sand / sludge from refineries are available in India for around Rs.15 a liter and if you go abroad it is Rs.3 per liter. The reason the price is lower, as there is no useable product that could be manufactured from sludge, whereas in India at least coke can be made. In Canada tar sand is available at Rs.3 a liter however, it is not useable and the cost of cleaning of that is more than the cost of the finished product. Our R&D team after many months of research has come out with excellent solutions. With our technology, we can utilize this tar sand and the stock of 3 billion barrels available for which these countries governments are looking for a solution.

MBA in Digital Governance & Management

The Indian Institute of Management Visakhapatnam (IIMV), an institution of national importance, under the aegis of the National e-Governance Division (NeGD), Ministry of Electronics and Information Technology (MeitY), Govt. of India (GOI) recently launched Post Graduate Program in Digital Governance and Management (PGP-DGM) leading to the award of Master of Business Administration (MBA) degree.

The Program is of 18-month duration, spread over 4 terms of 4.5 months each. The Program is designed for an immersive and active learning experience for participants. The selected candidates will be required to complete the 'Domestic component' as well as the 'International component' of about 2 weeks at an international institution/university.In addition, participants would be required to carry out a Capstone Project of practical importance, with potential for implementation in the Digital Governance & Management space.

It is envisaged that the graduating candidates would catalyse the footprint and impact of Digital India growing more pervasive and profound, thereby contributing to quantitative and qualitative transformation in the delivery of services to end-users.

"The programme is blended with a judicious mix of traditional and virtual classroom modes of learning, a capstone project and an international immersion of two weeks. The programme is designed for Government offcials and public sector executives responsible for the design and implementation of digital governance initiatives as well as technology managers, who lead implementation teams of the associated industry partners," said M.S. Rao, I.A.S. , President & Chief Executive Officer, National e-Governance Division, Ministry of Electronics & Information Technology (MeitY) Government of India.

Indian Institute of Management Visakhapatnam (IIMV) belongs to the prestigious IIM family of business schools. The fees will be - Rs.16,50,000/- (Rupees Sixteen Lakh, Fifty Thousand only) and candidates can be Self-financing or Sponsored by Employer. Application Deadline - November 30, 2019. Contact - https://www.iimv.ac.in/admissions/pgpdgm/application-form

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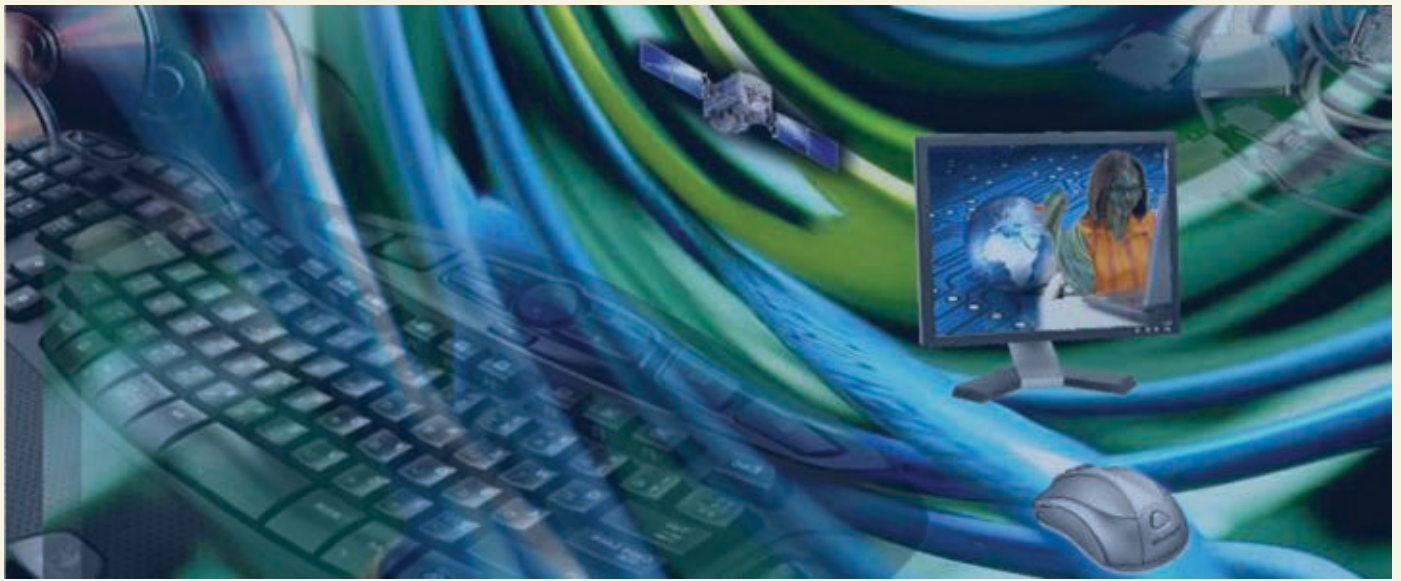
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- the bridge between exporters and policy makers
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- a one-stop-shop for research and information for exporters, etc.

Highlights

- ESC acts as a catalyst to take all Indian ICT Enterprises - large, small and medium - to join the mainstream of exports.
- ESC is committed to position India as a Knowledge Capital on the world ICT map
- ESC offers support to foreign companies interested in establishing business interests in India.
- ESC organises INDIASOFT - India's largest premium global B2B event every year where Indian IT companies exhibit their capabilities and buyers are invited across the world to visit the exhibition.

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