Digital-India-Connecting the
Unconnected with technology

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OUR INSPIRATION

From the Desk of the Chief Editor

Digital India is the flavour of the season, and not without any reason.

Digital technologies have permeated into more and more aspects of our private and public life spaces. A lot of us increasingly depend on them to order groceries, book a taxi ride or train and flight tickets, file tax returns and apply for a passport. The entire basket of Information and Communication Technologies (ICTs), which include laptops, tablets, smartphones, broadband and Wi-Fi connectivity, are seen to represent a new wave of general purpose technologies, similar to what electricity was in the early 20th century and steam engines were in the early 19th century. On the other hand, India, home to the second largest population in the world and witness to relatively higher economic growth rates in the past few years, is seen as an important market, still untapped in terms of usage of digital technologies. All this leads up to the, not so unsurprising, optimism and euphoria that engulfs our current set of policy makers and large global corporates that sell and, often control, important components of these digital technologies.

This issue of AMITECH focuses on Technological Advancements towards Digital India Campaign.

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Director, ASET
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TECHINFO

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Social, Economical and Environmental Impacts of Renewable Energy Systems

Conventional energy sources based on oil, coal, and natural gas have proven to be highly effective drivers of economic progress, but at the same time damaging to the environment and to human health. Keeping in mind, the social, economical and environmental effects of renewable energy system have been discussed. The uses of renewable energy system, instead of, conventional energy system, to control the social, economical and environmental problems have been discussed. The results show that the trends of total emission reduction in different years, which is exponentially increasing after the installation of renewable energy system in remote areas. Conventional energy sources based on oil, coal, and natural gas are damaging economic progress, environment and human life. These traditional fossil fuel-based energy sources are facing increasing pressure on a host of environmental fronts, with perhaps the most serious challenge confronting the future use of coal being the Kyoto Protocol greenhouse gas reduction targets. Renewable energy sources currently supply somewhere between 15 percent and 20 percent of world's total energy demand. The supply is dominated by traditional biomass, mostly fuel wood used for cooking and heating, especially in developing countries in Africa, Asia and Latin America. New renewable energy sources (solar energy, wind energy, modern bio-energy, geothermal energy, and small hydropower) are currently contributing about two percent. A number of scenario studies have investigated the potential contribution of renewable to global energy supplies, indicating that in the second half of the 21st century
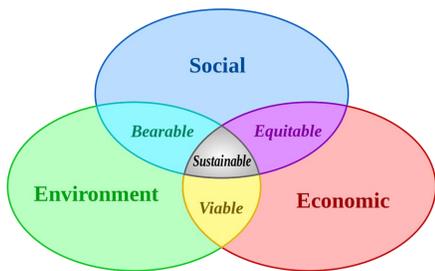
their contribution might range from the present figure of nearly 20% to more than 50% with the right policies in place The potential of renewable energy sources is enormous as they can in principle meet many times the world's energy demand. Renewable energy sources such as small hydropower, wind, solar, biomass, and geothermal can provide sustainable energy services, based on the use of routinely available, indigenous resources. A transition to renewable-based energy systems is looking increasingly likely as the costs of solar and wind power systems have dropped substantially in the past 30 years, and continue to decline, while the price of oil and gas continue to fluctuate. In fact, fossil fuel and renewable energy prices, social and environmental costs are heading in opposite directions. Furthermore, the economic and policy mechanisms needed to support the widespread dissemination and sustainable markets for renewable energy systems have also rapidly evolved. It is becoming clear that future growth in the energy sector is primarily in the new regime of renewable, and to some extent natural gas-based systems, and not in conventional oil and coal sources. Financial markets are awakening to the future growth potential of renewable and other new energy technologies, and this is a likely harbinger of the economic reality of truly competitive renewable energy systems. These systems can have dramatically reduced as well as widely dispersed environmental impacts, rather than larger, more centralized impacts that in some cases are serious contributors to ambient air pollution, acid rain, and global climate change.
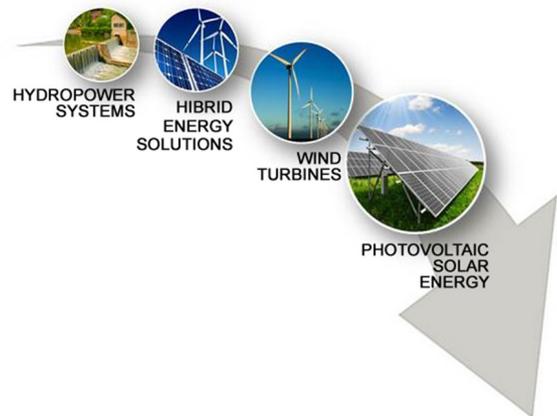
Mr. Rohit Pandey
Assistant Professor (MAE)

Carbon 'sea urchins'

Carbon capture and storage (CCS) typically involves separating CO_2 from fuel gases and then either storing it in saline aquifers or converting it into mineral carbonates, including calcium carbonate, the main component of egg shells, marine organism shells and the sea urchin exoskeleton. In the latter, the mineralization process is deemed a more reliable maintenance-free solution to the problem of CO_2 storage.

UK scientists have taken inspiration from the sea urchin and shown how nickel nanoparticles could be a cheap and re-usable catalyst in a key step for capturing carbon dioxide produced by power plants and the chemical industry.

At the University of Newcastle, UK it has been discovered that nickel nanoparticles can catalyze the hydration reaction that turns CO_2 in water into carbonic acid – a crucial step for separating CO_2 for the mineralization process. **They made the discovery after they found high concentrations of nickel ions on the surface of sea urchin larvae, suggesting that nickel plays a role in forming the sea urchin's exoskeleton.**

Currently, industry uses amines to separate CO_2 but this approach is not energy efficient. Other studies on CCS mineralisation have used the enzyme carbonic anhydrase, which works in a similar way to nickel nanoparticles. However, the enzyme is sensitive to pH and the extraction and purification process is costly.

As well as being cheaper, nickel nanoparticles also work regardless of the pH. As they are magnetic they can be recovered easily too. Though nickel nanoparticles are toxic, but recycling should alleviate any environmental concerns.

In 2013, carbon 'sea urchins' were accidentally prepared by researchers at Queen Mary and Kent Universities, growing on the surface of the carbon nanotube equipment. Intentionally roughening the surface accelerated the synthesis of these spiky iron-filled carbon balls with unusual magnetic properties.

Although exciting applications such as permanent magnets, cancer therapy and batteries that charge from waste heat have been proposed, it seems likely that, like other carbon nanomaterials, new discoveries will outpace implementation: cheap and efficient production of carbon nanomaterials of a high enough quality has not yet been achieved.

The next step would be to mineralise carbonic acid to environmentally friendly solid minerals including magnesium carbonate, calcium carbonate and dolomite, which could be used as a building material. 'The current challenge that we are addressing is to quantify the process. However, there are doubts that this is a significant breakthrough for CCS. 'This work represents an incremental addition to CO2 capture where the catalytic dimension is relevant,' comments Mark Keane, who investigates catalysis engineering at Heriot-Watt University in Edinburgh, UK. 'True innovation, however, should harness catalytic action in the conversion of CO2 to high value products, such as carbamates.'


Dr. Rachna Kathal
Assistant Professor (Applied Chemistry)

Nano –Diamonds Based Lithium-Ion Batteries

Microscopic diamonds added to lithium-based batteries could help prevent the fires and explosions that can bedevil the energy storage devices. This advance could also help lay the foundation for lithium-based batteries with pure lithium electrodes that can store up to 10 times more energy than today's lithium-ion batteries, researchers say. Lithium-based batteries have become notorious for safety incidents where they can burst into flames or even explode. A key reason such hazards can occur is the formation of dendrites—tendril-like deposits of lithium that can grow long enough to pierce the barrier separating a lithium-ion battery's positive and negative halves and cause it a short circuit. Dendrites form when a battery electrode degrades and metal ions deposit onto the electrode's surface. To avoid dendrite formation, today's lithium-based batteries don't use a pure lithium metal electrode. Instead they often use an electrode made of graphite that's filled with lithium. Although the graphite helps suppress dendrite growth, such electrodes also store only about 1/10th the energy pure lithium could. Now researchers say that nanodiamonds crystals each only about 5 nanometers wide can help prevent dendrite formation. Nanodiamonds are often used in the electroplating industry to suppress dendrite growth. When these crystals are deposited onto surfaces, they naturally slide together to form a smooth film, which in turns helps other materials coat those surfaces in a more uniform manner that keeps dendrites from growing. The scientists created nanodiamonds in a low-cost manner by detonating explosives in a sealed chamber. They next mixed these nanodiamonds into the electrolyte solution typically used in lithium-ion batteries that helps electric charge flow within the devices. In experiments, the researchers found that lithium ions could easily attach to nanodiamonds and plated onto electrodes in an orderly manner. They discovered that nanodiamonds completely suppressed dendrite formation during 100 cycles of discharging and recharging over 200 hours. This is an important step towards improving safety and increasing probability of use of pure metal anodes—not only lithium, but also, zinc, sodium and others—in rechargeable batteries. Future research will explore how reliable nanodiamond additives prove over more cycles.
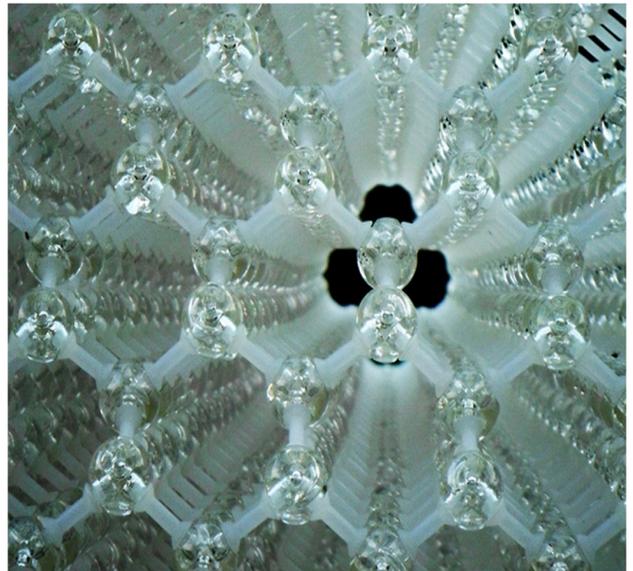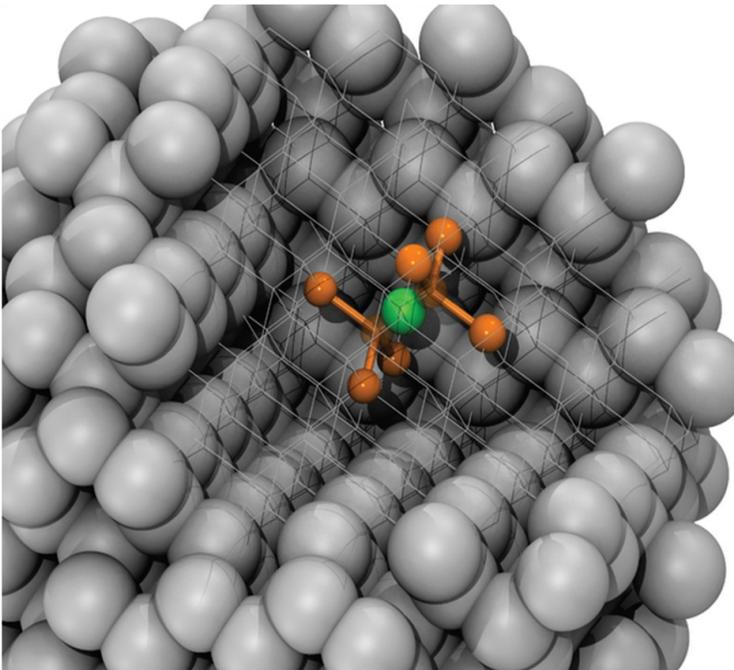
Dr. Vivek Singh Kushwah
Assistant Professor (ECE)

Smart Fluids

In recent past science and technology has made tremendous progress. Researchers are trying to solve problems related to day to day life. Many of these problems demand materials which can change their properties based on their surroundings, encountering this inefficiency in the day to day materials, a new class of smart materials is being developed over the past few decades whose properties can be altered significantly in accordance with external stimuli within a fraction of a second and in reverse manner. As an example, viscosity of oil is more or less fixed and slightly affected by changes in temperature. In contrast to these conventional materials, the ongoing research for improved performance has also produced multifunctional materials, which include fluid, which do have properties that can be altered significantly during use and, moreover, in a fast and reversible manner. There is class of fluid exists, which are field responsive and change their properties under the influence of external stimuli. These types of fluids referred as smart fluids which are

□ Magnetorheological
□ Electro rheological
□ Ferrofluid and some Magnetic emulsion

These fluids can respond in a continuous, rapid and reversible manner on application of external to react to changes in their environment.

field which is either magnetic in nature or electric. In this way it is possible for these materials Magnetic fluids do not exist in nature; they are synthesized fluids and posses controllable properties. Synthesis and active development of smart fluids has been started in the middle of last century. In 1948 Jacob Rabinow has first reported Magnetorheological (MR) fluid which was interestingly almost concurrent with the discovery of Electrorheological (ER) fluid by Winslow. Ferrofluid was developed much later (1960) after MR fluid by Papple and Rosensweig. However selection between MR fluid and ER fluid depends upon the environment it is to be used in some common applications like a damper, the MR fluid is more desirable than ER fluid because of the great response time and drastic change in viscosity. Ferrofluid and MR fluid together are sometimes referred to as Magnetic fluid but they are different in nature and composition. MR fluid is a colloidal system which has controllable rheological properties; such colloidal system has many engineering aspects like MR damper, clutch, prosthetic limbs, gun recoil system and possibly others. Magnetic nanoparticles for medical applications have been developed by many researchers. Separation, immunoassay, drug delivery, magnetic resonance imaging (MRI) and hyperthermia are enhanced by the use of magnetic nanoparticles and ferrofluids.
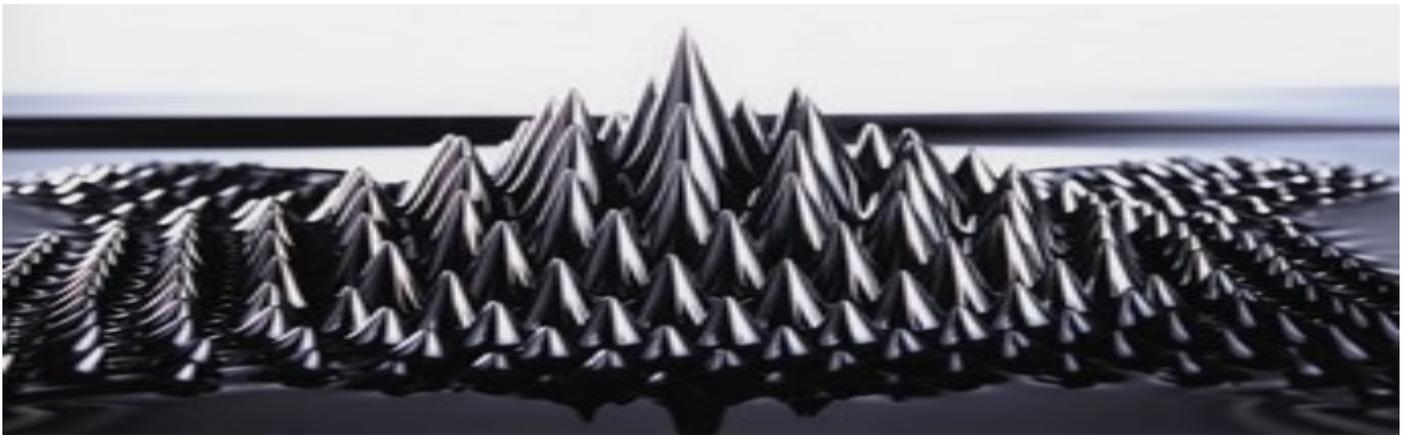
Dr. Snehal Jani
Assistant Professor (Applied Physics)

Digitize India Platform (DIP)

Digitize India Platform (DIP) is an initiative of the Government of India under the Digital India Programme to provide digitization services for scanned document images or physical documents for any organization. The aim is to digitize and make usable all the existing content in different formats and media, languages, digitize and create data extracts for document management, IT applications and records management.

DIP provides an innovative solution by combining machine intelligence and a cost effective crowd sourcing model. It features a secure and automated platform for processing and extracting relevant data from document images in a format that is usable for meta-data tagging, IT application processing and analysis.

Digitize India Platform (DIP) offers an opportunity for government agencies to transform themselves into digital enterprises and for Digital Contributors, rewards for doing simple data entry jobs. It is intended to leverage DIP to lead all organizations towards a paperless office, make data available on demand to the citizens, free archived documents storage spaces and enhance digital public service delivery.

The platform was launched on July 1, 2015 as part of the Digital India programme.

The Three Stakeholders

The government has identified three important stakeholders namely the User Organization, the Digital Contributor & the Platform Operator.

1**. User Organisation**

Government departments, Public Sector Organization and Autonomous bodies can become a *user organization* and utilize this platform. A user Organization can submit their records for digitization to platform operator. The records should preferably be in a scanned image format. However, organizations who wish to submit physical records will have to pay for scanning separately.

Mrs. Madhvi Dhingra
Assistant Professor (CSE)

The scanned images are then shredded into snippets with meaningful data. The following process is followed for the scanned documents.
- All scanned images are shredded into snippets with meaning full data
- Shredding done as per Organizations requirement for data digitization
- Documents meta data information is maintained throughout the life cycle of the document

2. Digital Contributors

Any Indian citizen with an Aadhaar Number can become a Digital Contributor (DC) and perform simple data entry tasks on the DIP. For every verified and correct task performed, the Contributor will earn reward points. They can redeem the reward points into monetary value or donate them to the Digital India initiative. The contributor is served random snippets by the platform.

3. Platform operator

The platform operator will help in the on boarding of user organization, pre-processing the scanned document images, creating templates for pages being digitized and delivering the digitized data to the user organization. Platform operator will also remunerate the Digital Contributors for their earned reward points. The following is broadly how the platform works
- Randomly serves snippets to contributors
- Snippets are matched for converted data in the match engine
- Correct entries get reward points for each correct words digitized
- Platform organizes the snippet text digitized by contributors
- Document are re-assembled and provided back to the organizations.
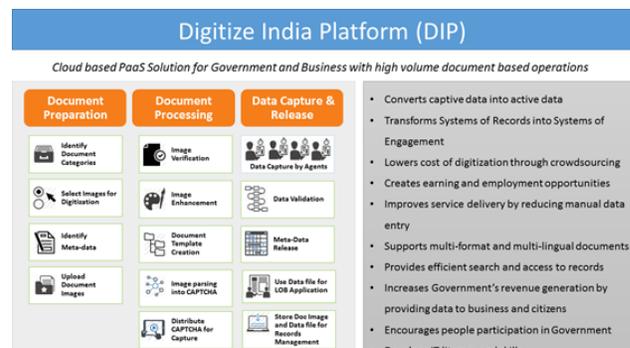
Digital India Programme: Importance and Impact

Digital India is a campaign launched by the Government of India to ensure that Government services are made available to citizens electronically by improving online infrastructure and by increasing Internet connectivity or by making the country digitally empowered in the field of technology. It was launched on 1 July 2015 by Prime Minister NarendraModi. The initiative includes plans to connect rural areas with high-speed internet networks. Digital India consists of three core components. These include: The Government of India entity Bharat Broadband Network Limited which executes the National Optical Fibre Network project will be the custodian of Digital India (DI) project. BBNL had or dered United Telecoms Limited to connect 250,000 villages through GPON to ensure FTTH based broadband. This will provide the first basic setup to

to be completed by 2017.The government is planning to create 28,000 seats of BPOs in various states and set up at least one Common Service Centre in each of theg ram panchayats in the state. Digital India was launched by the Prime Minister of India Shri. NarendraModi on 1 July 2015 - with an objective of connecting rural areas with high-speed Internet networks and improving digital literacy. The vision of Digital India programme is inclusive growth in areas of electronic services, products, manufacturing and job opportunities etc. and it is centred on three key areas – Digital Infrastructure as a Utility to Every Citizen, Governance & Services on Demand and Digital Empowerment of Citizens. It would also bring in public accountability through mandated delivery of government's services electronically; a Unique ID and e-Pramaan based on authentic and standard based interoperable and integrated government applications and data basis.

Vision Areas of Digital India
The Digital India programme is centred on three key vision areas:

| Digital Infrastructure as a Core Utility to Every Citizen	→	Governance and Services on Demand	→	Digital Empowerment of Citizens
Digital Infrastructure as a Utility to Every Citizen		**Governance & Services on Demand**		**Digital Empowerment of Citizens**

Key Projects of Digital India programme:

1. **Digital Locker System** aims to minimize the usage of physical documents and enable sharing of e-documents across agencies. The sharing of the e-documents will be done through registered repositories thereby ensuring the authenticity of the documents online.

2. **MyGov.in** has been implemented as a platform for citizen engagement in governance, through a "Discuss", "Do" and "Disseminate" approach. The mobile App for MyGov would bring these features to users on a mobile phone.

3. Swachh Bharat Mission (SBM) Mobile app would be used by people and Government organizations for achieving the goals of Swachh Bharat Mission.

4. eSign framework would allow citizens to digitally sign a document online using Aadhaar authentication.

5. The **Online Registration System (ORS)** under the eHospital application has been introduced. This application provides important services such as online registration, payment of fees and appointment, online diagnostic reports, enquiring availability of blood online etc.

6. National Scholarships Portal is a one stop solution for end to end scholarship process right from submission of student application, verification, sanction and disbursal to end beneficiary for all the scholarships provided by the Government of India.

7. DeitY has undertaken an initiative namely **Digitize India Platform (DIP)** for large scale digitization of records in the country that would facilitate efficient delivery of services to the citizens.

8. The Government of India has undertaken an initiative namely **Bharat Net**, a high speed digital highway to connect all 2.5 lakh Gram Panchayats of country. This would be the world's largest rural broadband connectivity project using optical fibre.

9. BSNL has introduced **Next Generation Network (NGN)**, to replace 30 year old exchanges, which is an IP based technology to manage all types of services like voice, data, multimedia/ video and other types of packet switched communication services.

10. To deliver citizen services electronically and improve the way citizens and authorities transact with each other, it is imperative to have ubiquitous connectivity. The government also realises this need as reflected by including '**broadband highways**' as one of the pillars of Digital India. While connectivity is one criterion, enabling and providing technologies to facilitate delivery of services to citizens forms the other.

1. Broadband Highways	4. E-Governance – Reforming government through Technology	7. Electronics Manufacturing – Target NET ZERO Imports
2. Universal Access to Phones	5. eKranti – Electronic delivery of services	8. IT for Jobs
3. Public Internet Access Programme	6. Information for All	9. Early Harvest Programmes
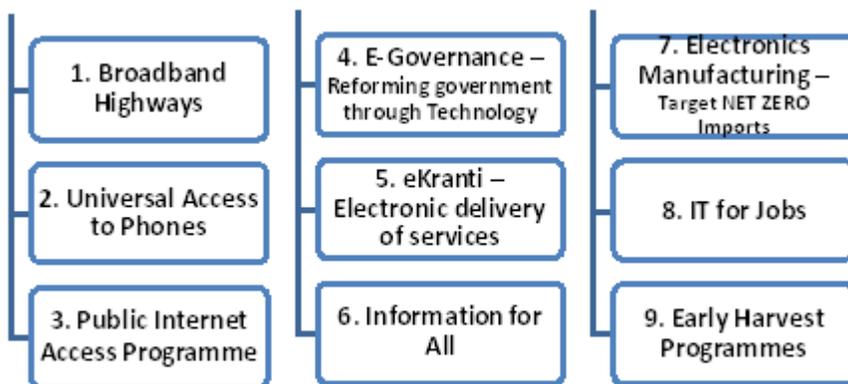
Nine Pillars Of The Digital India

Dr. A.K.Upadhyay
Professor (CSE)

Indian Handset Industry: Propelling the Digital India Initiative

The Indian mobile handset industry has witnessed unprecedented growth in recent years. The country has the second highest number of mobile subscribers worldwide, having overtaken the United States in the first half of 2016.

The rapid proliferation of mobile phones has bridged the communication divide across geographical locations. It has empowered people and opened new opportunities, access, and possibilities few could have imagined just a decade ago.

The government's Digital India initiative has come at the right time. Affordable smart phones are propelling the government's efforts to move towards a digital economy so that the large unorganized sector comes under the tax net. In this context, the ongoing mobile tech revolution augurs well for the nine key pillars of digital India: broadband highway, universal access to internet, public internet access programme, e-governance – reforming government through technology, e-Kranti – electronic delivery of services, information for all, electronics manufacturing, IT for jobs, and early harvest programme.

Many conventional services like banking, education, marketing, television and routine transaction payments have now converged onto a mobile screen. Expansion of the 4G network and a dramatic dip in prices of data services are fueling adoption of such mobile app technology propositions.

The highly-acclaimed Aadhaar initiative introduced a mobile app version called m-seva. It has already witnessed 4.5 million downloads. This convergence of government-initiated schemes and programs on the mobile platform are aimed at reaching all citizens across the country.

The mobile revolution is also giving a fillip to financial services. The Prime Minister's ambitious objective of providing banking services to every Indian through the Jan Dhan program has gained rapid traction. This is attributed largely to the strong technology support provided by the mobile tech ecosystem.

Healthcare is another area where the confluence of mobile technologies and handset devices is reaping rich benefits for all stakeholders – particularly the end-users. People are now able to get expert medical advice easily, even from their homes. Formal education is now available with the click of a button on the mobile screen.

A recent study estimates that mobile apps collectively contributed Rs 1.4 lakh crore to India's GDP in 2015-16 which may grow to Rs 18 lakh crore by 2020. In essence, a world of new possibilities has opened up with mobile technologies evolving at a fast pace. The future clearly points toward 1.3 billion connected Indians.

Mrs. Rinkoo Bhatia
Assistant Professor (ECE)

TECHVIEWS

Innovative Transportation Technique: A Need for Urban Traffic Management and Regulation

Road Traffic congestion is a big problem in the larger cities of the world, especially in developing countries like India. Road traffic congestion creates the problem of road traffic jams, due to which lots of other problem arises likewise increased travelling time, air pollution from the jammed vehicles and more fuel contains separate fully-functional units with their own characteristics interrelated to econsumption, frustration delay in the office timing which lead to decline in the productivity of the company, so it is also the loss of nation. Innovative Transportation System ach other to conform a flexible system that can respond to in an effective way to solve the problem of Road traffic congestion.

Challenges in Transportation system

The prosperity of our country mainly depends on productivity of our industries and maintenance of our environment. Transport has an important role in facilitating increased efficiency that can enhance our prosperity. The challenges ahead to be met in the present century includes

1) Growth in travel with population and industry growth
2) Need for more secure transport
3) Increased freight transport
4) Impact of traffic incidents
5) Constraints on building new roads
6) Degrading environment

The future of transportation lies not only in concrete and steel, but also increasingly in using electronics and communication technology. Application of electronics and communication enables elements within the transportation system vehicles, roads, traffic lights, message signs, etc. to become intelligent by embedding them with microchips and sensors and empowering them to communicate with each other through wireless technologies.

Ms. Pooja Shrivastava
Assistant Professor (CE)

In the leading nations in the world, Innovative Transportation System brings significant improvement in transportation system performance, including reduced congestion and increased safety and traveler convenience.

Healthcare is another area where the confluence of mobile technologies and handset devices is reaping rich benefits for all stakeholders – particularly the end-users. People are now able to get expert medical advice easily, even from their homes. Formal education is now available with the click of a button on the mobile screen. A recent study estimates that mobile apps collectively contributed Rs 1.4 lakh crore to India's GDP in 2015-16 which may grow to Rs 18 lakh crore by 2020. In essence, a world of new possibilities has opened up with mobile technologies evolving at a fast pace. The future clearly points toward 1.3 billion connected Indians. **Good outcomes Innovative Transportation Technique for society in the following areas:**

Safety and Security
Efficiency and Productivity
Mobility and access
Transport pricing
Environment
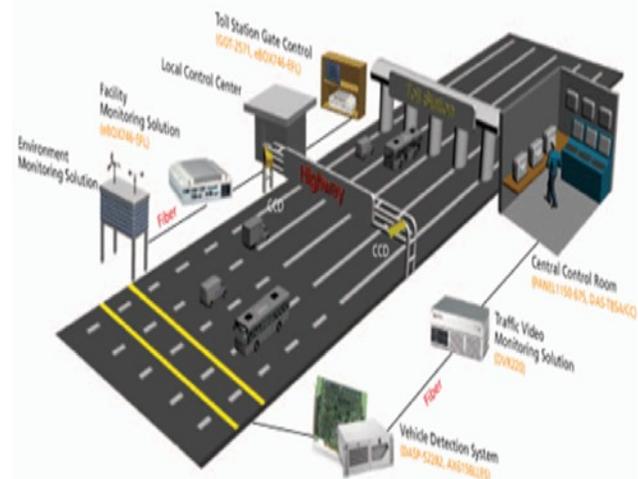
Digital India Projects

Digital India is a campaign launched by the Government of India on 2 July 2015 by Prime Minister Narendra Modi. The initiative includes plans to connect rural areas with high-speed internet networks. Digital India consists of three core components. They are:

- Development of secure and stable Digital Infrastructure
- Delivering government services digitally

    Universal Digital Literacy

 PM Modi rightly said in his speech in San Jose, "I see technology as a means to empower and as a tool that bridges the distance between hope and opportunity. Social media is reducing social barriers. It connects people on the strength of human values, not identities." Technology is a bridge indeed, a bridge that connects the hope that India's villages will be educated and aware to the opportunity of internet and access to information from across the world. 'Digital India' is not just an initiative but a need for this country, where majority of population still does not have access to the world of internet. The Digital India initiative seeks to lay emphasis on egovernance and transform India into a digitally empowered society. It is to ensure that government services are available to citizens electronically.

MAJOR PROJECTS UNDER THE INITIATIVE-

1. **Highways to have broadband services:** Government aims to lay national optical fibre network in all 2.5 lakh gram panchayats. Broadband for the rural will be laid by December 2016 and broadband for all urban will mandate communication infrastructure in new urban development and buildings. By March 2017, the government aims to provide nationwide information infrastructure.

2. **Easy access to mobile connectivity:** The government is taking steps to ensure that by 2018 all villages are covered through mobile connectivity. The aim is to increase network penetration and cover gaps in all 44,000 villages.

3. **IT Training for Jobs:** This initiative seeks to train 10 million people in towns and villages for IT sector jobs in five years. It also aims to train 0.3 million agents to run viable businesses delivering IT services.

4. **Manufacturing of electronics**: The government is focusing on zero imports of electronics. In order to achieve this, the government aims to put up smart energy meters, micro ATMs, mobile, consumer and medical electronics.

5. **E-Governance**: The government aims to improve processes and delivery of services through e-Governance with UIDAI, payment gateway, EDI and mobile platforms. School certificates, voter ID cards will be provided online. This aims for a faster examination of data.

Shreyas Mehta
B.Tech (CSE)
III Sem

Making the Freedom Count

Since the Midnight of 15th August 1947, when *free* India was born, we have cherished each and every moment of being free from the British Rule. This can be very well related with the power of India being accepted widely in various fields – in terms of Economy, Defence, Agriculture and many more such dimensions in which we are excelling.

But then it can also not be avoided that this freedom costed us a large number of soldiers, martyrs, freedom fighters, dedicated leaders and their sacrifices is what makes this country what it is today.

Now the question that arises is – "Are we making this *Freedom Count*?"

If we honestly ask ourselves, we'll get the answer. Is this really enough? Is this what we'd have planned for a Better India? The last 7 decades of *freedom* can be easily taken out on an ECG machine and the reports would be surprising as well as drastic in terms of development and growth.

The concerning thought is, *since the ball has been in our court for the last 70 years,* did we enough to rise in the International Assembly. To which the past records shall prove to be an evidence and that's not all. Since we constitute 65% of *Youth* in present case scenario in the nation, that makes us the *Youngest* nation, now is the high time that we start to endure the needed strengths in the roots of the *Largest Democracy.* So that the coming generations shall not held us responsible for what is not right as we are doing nowadays.

There have been various sorts of programs been initiated in order to provide the concrete to build a strong and tough base of advanced mechanism for the proper functioning of the country. Let's just *stop crying over the spilt milk.*

"The Past has gone, the Future is yet to unfurl, let's make the best out of the Present"

We all as a whole need to take a step forward for our country, for all those freedom fighters, for all those leaders.

"When every citizen of this nation of 130 crore citizens takes a step forward, our country takes *130 crores step forward..*" – P.M. Modi

It's the best time to start as our platinum jubilee is already passed and we need to get ready for our *double Platinum Jubilee i.e. in 2022*. It's in our (Youth) hands about how we plan and implement things for the betterment of the nation.


'**Kumar Vaibhav**
B.Tech (MAE)
V Sem

Do You Know?

ABBREVIATION	FULL FORM
SIM	Subscriber Identity Module
GSM	Global System for Mobile
IOT	Internet of Things
MIUI	Mi User Interface
CDMA	Code Division Multiple Access
RUIM	Removable User Identity Module
ISO	International Organization for Standardization
IEC	International Electrotechnical Commission
GPRS	General Packet Radio Service
IEMI	International Mobile Equipment Identity
LTE	Long Term Evolution
VOLTE	voice over Long Term Evolution
OFDM	Orthogonal frequency-division multiplexing
OFDMA	Orthogonal frequency-division multiple access
NFC	Near Field Communication
EDGE	Enhanced Data Rates for GSM Evolution
ISMS	information security management system

Nivendita Sharma
B.Tech (ECE)
V Sem

TECHTAINMENT

Crossword

DOWN

1 – Plastics now account for _____ percent of material used in a US car (3)

3 – Global production of this metal has risen four-fold since 1950 (6)

4 – This international organisation agency is responsible for HTTP/HTML (4)

6 – This fossil fuel is expected to account for a bigger proportion of the world's energy usage in 25 years versus now (3)

8 – 30% of our interns don't intend to buy ___ (4)

10 – This city is expected to see one of the highest increases in the number of its high net worth individuals over the next decade (8)

11 – This city attracts more international tourists than Paris, but fewer than London (5)

12 – Being a _____ will be a good choice of profession in 2020 (6)

13 – US Presidents have used this word less frequently than 'justice' in their State of the Union speeches (9)

16 – If you lose your wallet in this city there is a 75% chance that you'll get it back (6)

17 – ___ accounts for 4% of the world's major arms imports (9)

21 – It will cost you twice as much in a taxi in this Swiss city as it does in *14 Across*

24 – Fashion on your doorstep within a day (4)

25 – US Presidents don't like this word very much (4)

26 – China accounts for 10% of this commodity's global trade (3)

28 – Water is the most popular target of cyber ___ (3)

ACROSS

2 – The sector with the greatest proportion of tech employees as a % of the total (9)

5 – Online dating knows no ___ (3)

7 – China accounts for 15% of this commodities' total trade value (6)

9 – An increasing number of young Americans are living with their _____ (7)

12 – This energy efficient company has attracted US$50 mn in investment from Google Ventures (4)

14 – It will cost you about £3 for a mile in an average taxi in this city

15 – This taxi hire app is worth a lot (4)

18 – This metal has experienced a sharp decline in its inflation-adjusted price over the last century (9)

19 – Five of the world's 100 richest people are associated with this sector (5)

20 – The third largest company in the world (6)

22 – The biggest consumer of whisky, by a mile (5)

23 – There won't be many high net worth individuals emerging from this Japansese city going forward (5)

24 – Many components of ____'s products were developed US government agencies (5)

27 – Ex-China, demand for this metal rose by only a 5% CAGR over the last decade (7)

29 – Only about 15% of employees in this country believe that they are overqualified for their job (11)

30 – The top four companies in this sub-sector account for 50% of global market share (4)

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What is 5G?

5G is coming this year. Or maybe not. In the race to 5G, or fifth generation wireless, companies are starting to promise the impossible, which will result in a lot of confusion over the next few years.

The G in 5G means it's a generation of wireless technology. While most generations have technically been defined by their data transmission speeds, each has also been marked by a break in encoding methods, or "air interfaces," which make it incompatible with the previous generation.

5G is a new network system that has much higher speeds and capacity, and much lower latency, than existing cellular systems. The technologies to be used in 5G are still being defined, but there are many details on which everyone agrees.
5G planning aims at higher capacity than current 4G, allowing a higher density of mobile broadband users, and supporting device-to-device, ultra reliable, and massive machine communications.[2]

5G research and development also aims at lower latency than 4G equipment and lower battery consumption, for better implementation of the Internet of things.

5G networks will use a type of encoding called OFDM, which is similar to the encoding that LTE uses. The air interface will be designed for much lower latency and greater flexibility than LTE, though.

small cells, even down to the size of home routers, than to be huge towers radiating great distances. Some of that is because of the nature of the frequencies used, but a lot of that is to expand network capacity.

So 5G networks need to be much smarter than previous systems, as they're juggling many more, smaller cells that can change size and shape. But even with existing macro cells, Qualcomm says 5G will be able to boost capacity by four times over current systems by leveraging wider bandwidths and advanced antenna technologies.

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V Sem

TECHTAINMENT

Word Search

'Its Out-of-This-World!' Word Search

Find all the hidden words in this spaced-out word search puzzle.

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D W T D B S N D N P L U T O M N V A S
T E A R T G O E M L O E P I O V G M E
P N C Y A J P L X M A M S V G N I H O
E O S H R T X I A J H I A U F O E L D
L W V S U E X N X R N R T W N Q H S R
B U K N W C T A C R S O A S Z A R H A
W S E I N D O I V O G Y O A E A R U E
C L U S T E R N L A M N S M M L Y U Y
K N Y S T C A K S L D E E T D T E Q T
D M Z X T L D A E T E M T R E V R C H
U T E N A L P L I T E T G B A M A S G
L T N R Z L O D A E O L A U R Q S W I
R Y I H C H A Y S K U V L S T P A S L
U I T L K U T G T C Y D Q A H K U F Y
U R H C F I R V E O G E A Q T T Q T A
D Q A V V Q U Y R R Y B L C B I I P W
I L S A D P N H O O Z F O O U B O Y Y
B B R N J P W Q I V Y U L G R R M N K
A G V V X B S E D G S I E O I T S C L
Y M E T E O R Y W R D K R G S O U J I
M O S G N I R O A E N P O A B E N R M
Z W N L F K J U P I T E R S T N E P C
U W K X S P A C E S H I P U L S V D F
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ASTEROID
BLACKHOLE
BOLIDE
CELESTIAL
CLUSTER
COMET
CONSTELLATION
EARTH
GALAXY
GRAVITY
JUPITER
LIGHTYEAR
MARS
MERCURY
METEOR
MILKYWAY
MOON
NEPTUNE
NOVA
ORBIT
PLANET
PLUTO
QUASAR
RINGS
ROCKET
SATELLITE
SPACESHIP
SOLARSYSTEM
STAR
SYZYGY
URANUS
VENUS
ZENITH

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TECHTOONS
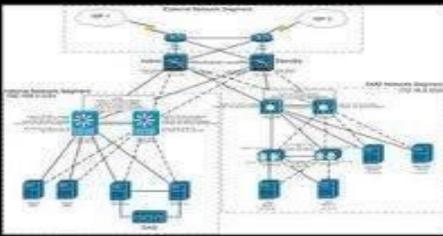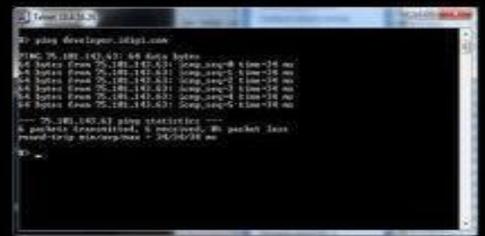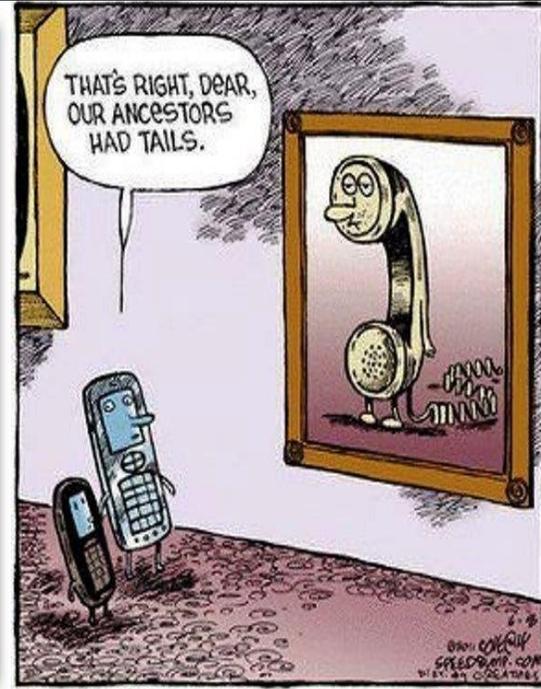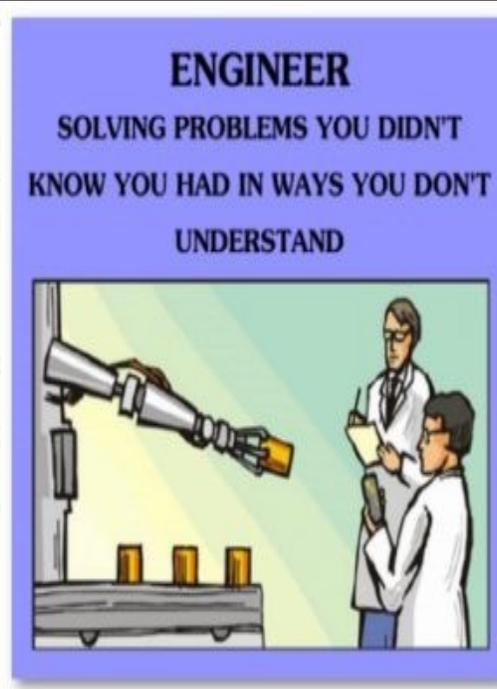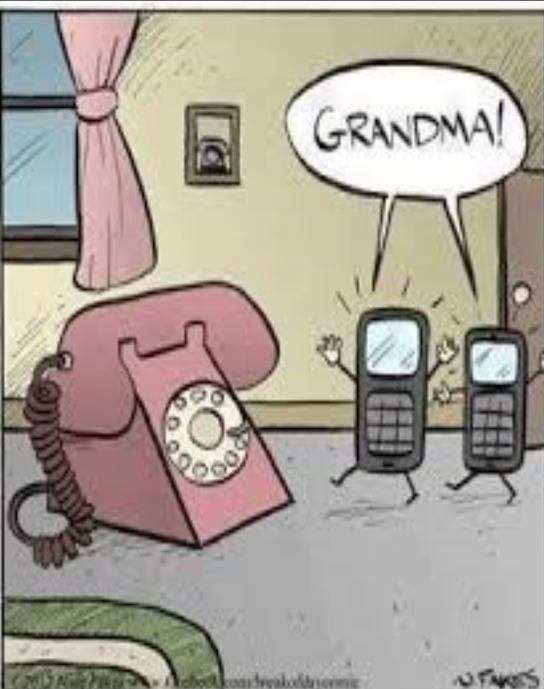
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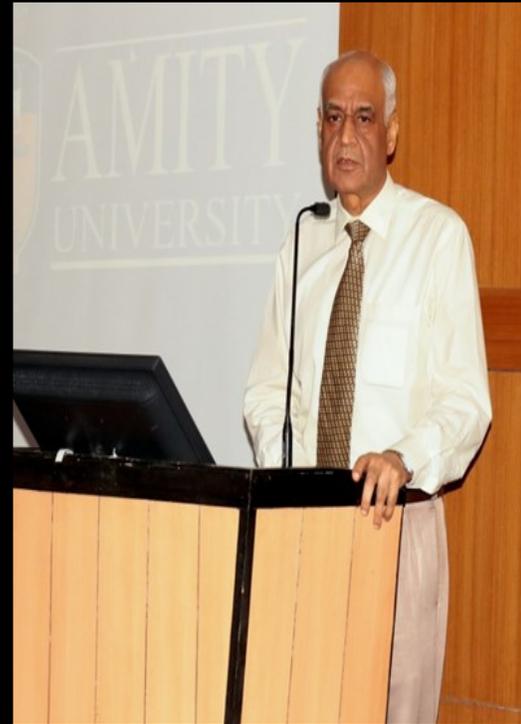
Industrial Visit of ECE Students at BSNL, Gwalior

Industrial visit of MAE Students at Shri Ram Fibers Ltd. , Malanpur