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LCD – based Contact Lens Display

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Ocean Optics appoints Hemchandra Sane as India sales manager

Ocean Optics, the industry leader in miniature spectroscopy and optical sensing, has appointed Mr. Hemchandra Sane as its new Sales Manager in India. Based in Mumbai, Mr. Sane will expand Ocean Optics' current sales network to further improve local service and support for its valued customers in India. In his new role Mr. Sane will help and guide both customers and distributors in introducing Ocean Optics equipment and provide support with installation and training. Ocean Optics' product range includes miniature spectrometers, light sources and accessories used in universities, R&D labs and industrial online process applications. Mr. Sane will be supported from Ocean Optics' European Sales & Applications Engineering Centre in the Netherlands.

A seasoned sales executive, Mr. Sane has two decades' experience working for various Indian and British companies selling engineering products into India. He has a BE in Mechanical Engineering and a Master's Degree in Marketing Management, both from Mumbai University.

PayPal appoints Lawrence Chan as vice president APAC and GM, Southeast Asia & India

PayPal has announced the appointment of Lawrence Chan as PayPal's vice president covering its Asia Pacific New Ventures organization as well as general manager for PayPal's Southeast Asia and India business, effective immediately.

Based in Singapore, Mr. Chan will lead the regional business strategy, sales, partnerships and merchant adoption of PayPal's newest payment innovations to transform commerce, from mobile to digital goods to PayPal Here. He will also be responsible for developing PayPal into an online and mobile payments leader, as well as expanding the company's geographic reach, in the exciting, fast-growing domestic and cross-border trade markets of Southeast Asia and India. Mr. Chan will report to PayPal's vice president of Asia, Mr. Rohan Mahadevan.

Mr. Chan holds a Bachelor of Science degree (2nd Class Upper Honors) in Industrial and Business Economics from the University of London's School of Economics and Political Science.
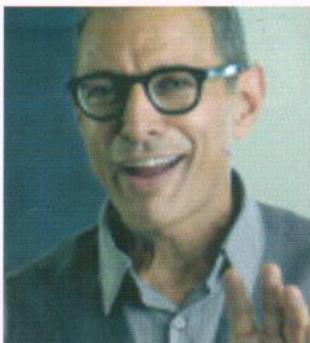
GSMA re-elects Franco Bernabe as its chairman

The GSMA recently elected new members of the GSMA Board for the two-year period from January 2013 through December 2014. The GSMA also has re-elected Franco Bernabe, Chairman and Chief Executive Officer, Telecom Italia Group, as its Chairman, and Jon Fredrik Baksaas, President and CEO, Telenor Group as its Deputy Chairman, for a second term in these roles. Mr. Bernabe has served as GSMA Chairman since January 2011, overseeing the strategic direction of the organisation, which represents nearly 800 of the world's mobile operators, as well as more than 230 companies in the broader mobile ecosystem. Mr. Baksaas has also served as Deputy Chairman since January 2011. The GSMA Board has 26 members, including 25 operator representatives from the world's largest operator groups as well as smaller, independent operators with global representation. The GSMA's Director General Anne Bouverot also serves on the GSMA Board.
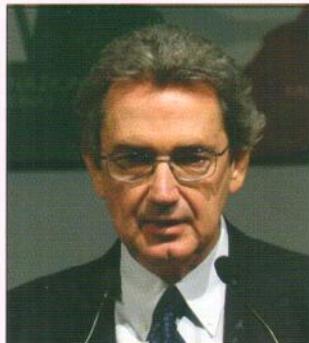
Suresh Vaswani appointed as Dell president

Technology major Dell has appointed former Wipro co-CEO Suresh Vaswani as president of Dell Services, its over $8 billion IT services arm. Vaswani succeeds Steve Schuckenbrock, who held executive leadership roles at Dell since joining the company in 2007. He will be responsible for developing and delivering end-to-end IT services and business solutions for global corporations, state and local governments, Dell said in a statement. Mr Vaswani, who previously led Dell Services' application and BPO line of business, will report to chairman and CEO Michael Dell in his new role. Mr. Vaswani is also responsible for Dell's IT delivery, including the company's infrastructure and applications worldwide. Vaswani joined Dell after 25 years at Wipro, where he served as the co-CEO of Wipro's IT business and was on the Board of Wipro Ltd. His exit from Wipro, along with co-CEO Girish Paranjape, came after the company scrapped its co-chief executive model last year.

Hemchandra Sane

Lawrence Chan

Franco Bernabe

Suresh Vaswani

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The views and opinions expressed by the authors are not necessarily shared by the Editor.

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Cell-sorting chip to lead to cell phone-sized medical labs

A technique that uses acoustic waves to sort cells on a chip may create miniature medical analytic devices that could make Star Trek's tricorder seem a bit bulky in comparison, according to a team of researchers at Penn State University. The device uses two beams of acoustic — or sound — waves to act as acoustic tweezers and sort a continuous flow of cells on a dime-sized chip, said Tony Jun Huang, associate professor of engineering science and mechanics, Penn State. By changing the frequency of the acoustic waves, researchers can easily alter the paths of the cells. Huang said that since the device can sort cells into five or more channels, it will allow more cell types to be analysed simultaneously, which paves the way for smaller, more efficient and less expensive analytic devices. "Eventually, you could do analysis on a device about the size of a cell phone," said Huang. "It is very doable and we are making in-roads to that right now."

'carbomorph', enables 3-D printing of personal electronics

The University of Warwick researchers have created a simple and inexpensive conductive plastic composite that can be used to produce electronic devices using the latest generation of low-cost 3D printers designed for use by hobbyists and even in the home. The material, nicknamed 'carbomorph', enables users to lay down electronic tracks and sensors as part of a 3D printed structure — allowing the printer to create touch-sensitive areas for example, which can then be connected to a simple electronic circuit board. So far the team has used the material to print objects with embedded flex sensors or with touch-sensitive buttons such as computer game controllers or a mug which can tell how full it is. The next step is to work on printing much more complex structures and electronic components including the wires and cables required to connect the devices to computers. The research was led by Dr Simon Leigh in the Department of Engineering at the University of Warwick. Dr Leigh said: "In the long term, this technology could revolutionalise the way we produce the world around us, making products such as personal electronics a lot more individualised and unique and in the process reducing electronic waste.

Radar squeezed in to low-cost fingernail-size

EU-funded researchers have squeezed radar technology into a low-cost fingernail-sized chip package that promises to lead to a new range of distance and motion sensing applications. The novel device could have important uses in the automotive industry, as well as mobile devices, robotics and other applications. Developed in the 'Silicon-based ultra-compact cost-efficient system design for mm-wave sensors' (Success) project, the device is the most complete silicon-based 'system-on-chip' package for radar operating at high frequencies beyond 100 GHz. 'this is the smallest complete radar system in the world,' says researchers. Measuring just 8 mm by 8 mm, the chip package is the culmination of three years of research by nine academic and industrial partners across Europe, supported by EUR 3 million in funding from the European Commission. The team drew on expertise from every part of the microelectronic development chain to develop the groundbreaking technology, which is expected to be put to use in commercial applications in the near future.

Materials for next-gen transparent conductors

A STAR's Institute of Materials Research and Engineering (IMRE) and Cima NanoTech, a US multinational company, have signed an agreement to jointly work on new sustainable nanomaterials, processes and devices for transparent conductors used to make cheaper and more efficient electronics and organic solar cells. IMRE and Cima NanoTech are collaborating to develop new transparent conductive materials and components, based on Cima's SANTE™ Technology and IMRE's know-how in printed electronics. These innovations will enable efficient conductive interfaces with high transparency, which can be developed into low cost and high performance products for displays, organic solar cells, and flexible electronics. Conventional Indium Tin Oxide (ITO) and Transparent Conductive Oxides (TCO) used in today's solar cells, OLEDs, flat panel TVs, and touchscreen displays have limitations in conductivity, flexibility, and cost. These new materials and processes that IMRE and Cima are developing will potentially enable faster response touch screens for large flexible displays and reduce production cost.

Enabling disabled manoeuvre computer cursors with thoughts

Stanford researchers have designed the fastest, most accurate algorithm, known as ReFIT, for brain-implantable prosthetic systems that can help disabled people manoeuvre computer cursors with their thoughts. The algorithm's speed, accuracy and natural movement approach those of a real arm, doubling performance of existing algorithms. When a paralysed person imagines moving a limb, cells in the part of the brain that controls movement still activate as if trying to make the immobile limb work again. Despite neurological injury or disease that has severed the pathway between brain and muscle, the region where the signals originate remains intact and

functional. In recent years, neuroscientists and neuroengineers working in prosthetics have begun to develop brain-implantable sensors that can measure signals from individual neurons, and after passing those signals through a mathematical decode algorithm, can use them to control computer cursors with thoughts. The results of the research are published in the journal *Nature Neuroscience* in a paper by Krishna Shenoy, a professor of electrical engineering, bioengineering and neurobiology at Stanford, and a team led by research associate Dr. Vikash Gilja and bioengineering doctoral candidate Paul Nuyujukian.

New method doubles wireless networks efficiency

Two professors at the University of California, Riverside Bourns College of Engineering have developed a new method that doubles the efficiency of wireless networks and could have a large impact on the mobile Internet and wireless industries. Efficiency of wireless networks is key because there is a limited amount of spectrum to transmit voice, text and Internet services, such as streaming video and music. The "spectrum crunch" is quickly being accelerated as customers convert from traditional cell phones to smartphones and tablets, which generate 121

times more traffic than a traditional cell phone. Without making networks more efficient, customers are likely to drop more calls, pay more money for service, endure slower data speed and not see an unlimited data plan again. The UC Riverside findings were outlined in a paper titled "A method for broadband full-duplex MIMO radio" recently published online in the journal IEEE Signal Processing Letters. It was co-authored by Yingbo Hua and Ping Liang, who are both electrical engineering professors, and three of their graduate students.

Human eye inspires more natural lens design

Drawing heavily upon nature for inspiration, a team of researchers has created a new artificial lens that is nearly identical to the natural lens of the human eye. This innovative lens, which is made up of thousands of nanoscale polymer layers, may one day provide a more natural performance in implantable lenses to replace damaged or diseased human eye lenses, as well as consumer vision products; it also may lead to superior ground and aerial surveillance technology. This work has been described by the Case Western Reserve University, Rose-Hulman Institute of Technology, U.S. Naval Research Laboratory,

and PolymerPlus team in the Optical Society's (OSA) open-access journal Optics Express. This also provides a new material approach for fabricating synthetic polymer lenses. The fundamental technology behind this new lens is called "GRIN" or gradient refractive index optics. In GRIN, light gets bent, or refracted, by varying degrees as it passes through a lens or other transparent material. This is in contrast to traditional lenses, like those found in optical telescopes and microscopes, which use their surface shape or single index of refraction to bend light one way or another.

New '4-D' transistor is preview of future computers

Researchers from Purdue and Harvard universities have created the transistor, which is made from a material that could replace silicon within a decade. Each transistor contains three tiny nanowires made not of silicon, like conventional transistors, but from a material called indium-gallium-arsenide. The three nanowires are progressively smaller, yielding a tapered cross section resembling a Christmas

tree. The research builds on previous work in which the team created a 3-D structure instead of conventional flat transistors. The approach could enable engineers to build faster, more compact and efficient integrated circuits and lighter laptops that generate less heat than today's. New findings show how to improve the device performance by linking the transistors vertically in parallel.

Production of batteries made cheaper and safer

Researchers at Aalto University, Finland have developed a method for producing lithium battery that is cheaper and more environmentally friendly than previously used methods. This new process has succeeded in replacing the harmful methylpyrrolidone (NMP) solvent, which is traditionally used in the manufacturing of electrodes, with water. Removing this harmful solvent from the production process makes the production of batteries simpler and safer for employees. Production costs of batteries can be decreased by as much as 5 percent. Some of this savings comes from the reduced cost of transporting and recycling harmful chemicals and a lower risk of exposure to employees. Improving production methods is important as the use of batteries is rapidly increasing around the world. The increase in electric car use in particular will strongly increase the global demand and production of batteries.

Thinning of semiconductor wafers process

The recently developed ability to measure physical changes in silicon when processed into microelectronic devices could improve fabrication techniques for even smaller circuits. Thinner semiconductor wafers to house electronic circuits are needed so that more computing power can be packed into ever-smaller electrical products. Thinning, however, makes the wafers brittle and prone to warping or breaking. A technique for measuring the stress in those chips during production is now available, thanks to developmental work led by Xiaowu Zhang at the A STAR Institute of Microelectronics, Singapore. The resulting information could enable miniature but robust semiconductor devices. Zhang and his co-workers designed and built stress sensors directly onto a silicon wafer to monitor the strain that such packaging exerts. They took advantage of the piezoresistive effect in silicon — when a force is applied to a silicon wafer, it pushes atoms closer together. In turn, the change in atom distribution alters the way an electrical current passes through the material, which can be measured as a change in resistance. Each stress sensor consisted of 16 resistors. Since the piezoresistive properties of silicon are well known, Zhang and his co-workers could simply convert the changes in resistance to a corresponding change in stress.

Indium-free organic light-emitting diodes developed

Scientists at the U.S. Department of Energy's (DOE) Ames Laboratory have discovered new ways of using a well-known polymer in organic light emitting diodes (OLEDs), which could eliminate the need for an increasingly problematic and breakable metal-oxide used in screen displays in computers, televisions, and cell phones. The metal-oxide, indium tin oxide (ITO), is a transparent conductor used as the anode for flat screen displays, and has been the standard for decades. Due to indium's limited supply, increasing cost and the increasing demand for its use in screen and lighting technologies, the U.S. Department of Energy has designated indium as "near-critical" in its assessment of materials vital to clean energy technology. Scientists have been working to find an energy efficient, cost effective substitute. The researchers at Ames Laboratory used computer simulations to show that the enhanced performance is largely an effect of the difference in the optical properties between the polymer and ITO-based devices.

How 'transparent' is graphene as coating material?

The amazing electrical, optical and strength properties of graphene, a single-atom-thick layer of carbon, have been extensively researched over the last decade. Recently, the material has been studied as a coating that might confer electrical conductivity while maintaining other properties of the underlying material. But the "transparency" of such a graphene coating to wetting — a measure of the degree to which liquids spread out or bead up on a surface — is not as absolute as some researchers had thought. New research at MIT shows that for materials with intermediate wettability, graphene does preserve the properties of the underlying material. But for more extreme cases — superhydrophobic surfaces, which intensely repel water, or superhydrophilic ones, which cause water to spread out — an added layer of graphene does significantly change the way coated materials behave. That is important, because these extreme cases are generally of greatest interest. For example, coating a superhydrophobic material with graphene was seen as a possible way of making electronic circuits that would be protected from short-circuiting and corrosion in water. But it is not quite that simple, the new research shows.

LCD-based Contact Lens Display

Imagine being able to text or view maps whilst driving, or better still, read up the emails while taking a shower in the morning, without even so much as glancing at the mobile phone. Such fanciful ideas are no longer the stuff of science fiction, thanks to the development of new technology that can project such information directly onto a contact lens.

Key to this invention is the development of minute-sized spherical, curved LCD displays, which can be made small enough to fit inside a contact lens — they are transparent too so they will not even impact on the eyesight.

Since the lenses can project images sent to them wirelessly, the potential is there for these displays to show directions or even texts from a smart phones.

Displays that appear right in front of the eyeballs is a popular theme in science fiction, and thanks to new developments in microsystems technology, those displays are one giant leap closer to becoming a reality.

Thanks to technological progress, in just a few years you might be excited to get something in your eye— like a text message.

One small step in technology development and a giant leap providing relief to millions of people. The Centre of Microsystems Technology has developed a tiny spherical LCD display, which can be embedded into contact lenses and wirelessly handle pro-
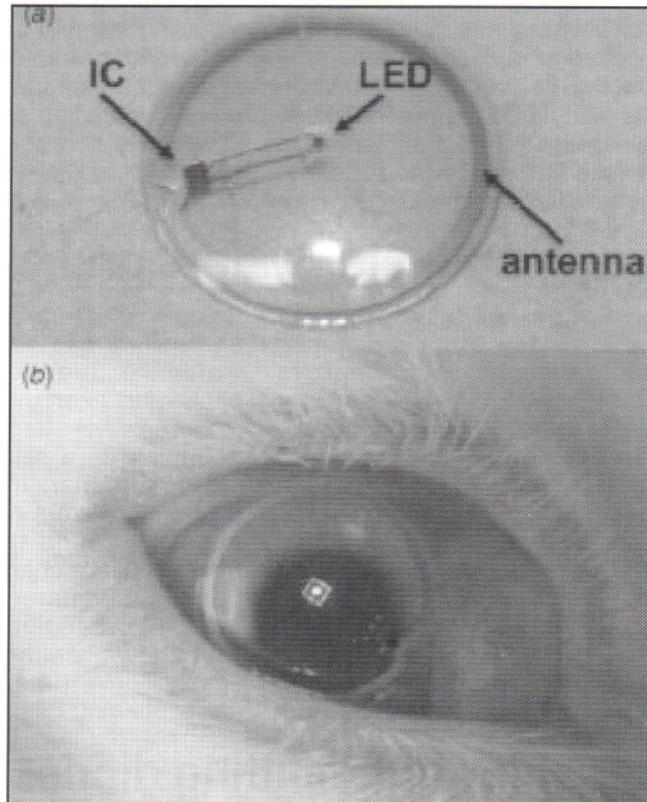
Figure 1: Structure of LCD Contact Lens with IC, LED and antenna

jected images. This is the first step toward fully pixelated contact lens displays.

This development took a major leap forward into the 21st century since the contact lens is embedded with an LCD computer display.

The new type of contact lens uses the entire surface of the lens to display letters and symbols.

The lens could darken to control the amount of light being transmitted to the retina for those with light sensitivity. Contacts with the tech could also be used to colour the iris — perhaps setting off a future fashion trend.

Contact lenses could enhance normal vision with 3D, high-res images. The

lenses could be the ultimate computer interface for military troops — fully transparent and hands-free. The eyewear could also help people with vision problems see more clearly.

The contact lenses could generate displays with a screen size equivalent to a 240-inch television, viewed at a distance of 10 feet.

Though LED contact lens displays have been around for some time, those lenses are limited to just a few small pixels on a very tiny area. The development, on the other hand, uses the entire surface of the lens to display pixels.

It can also handle many different pixel numbers

and sizes for a variety of applications, plus display one big pixel to act as adaptive sunglasses, or show many different pixels to make up symbols.

One of the biggest hurdles for the team was getting the liquid crystal cells to form a curved sphere.

The main challenge was to create a very thin, spherically curved substrate with active layers that could withstand the extreme moulding processes.

The team overcame that challenge by using new types of conductive polymers and then integrating those into a smooth spherical cell.

The device has the potential for not only cosmetic uses but medical uses as well.

The difference between the lenses and embeddable screens is the amount of pixels that can be used: previous LED-based screens could only handle a few pixels. The new LCD-based screens, in covering the entire lens, open up a variety of never-before-seen uses.

Normally, flexible displays using liquid crystal cells are not designed to be formed into a new shape, especially not a spherical one. Thus, the main challenge was to create a very thin, spherically curved substrate with active layers that could withstand the extreme moulding processes, according to the researchers. Moreover, since they had to use very thin polymer films, their influence on the smoothness of the display had to

be studied in detail. By using new kinds of conductive polymers and integrating them into a smooth spherical cell, we were able to fabricate a new LCD-based contact lens display.

By adapting the patterning process of the conductive layer, this technology enables applications with a broad range of pixel number and sizes, such as a one pixel, fully covered contact lens acting as adaptable sunglasses, or a highly pixilated contact lens display. The prototype that was shown off only had a patterned dollar sign in the LCD, but many other potential uses for this, and the ultimate goal is to advance the display to the level that would allow for a full head-up display to be laid over the wearer's field of view.

Unlike LED-based contact lens displays — which are limited to a few small pixels — the LCD-based technology allows the use of the entire display surface. The technology allows applications with a "broad range of pixel number and sizes fully covering the contact lens acting as adaptable sunglasses, or a highly pixelated contact lens display.

The first prototype developed contains a patterned dollar sign, reminiscent of the many cartoons in which characters sport dollar signs in their eyes. In the future, researchers envision "fully autonomous electronic contact lenses" embedded with this display. These could be used for medical purposes, such as controlling the light transmission toward the retina in cases of damaged irises. It could also be used for cosmetic pur-

poses, such as an iris with a tunable colour. In the future, the display could also superimpose an image onto the user's normal view.

Before mass production and consumer implementation, there are still "hurdles" to overcome.

Research and developments

The ultimate aim of researchers is to come up with a fully-pixelated contact lens display that would have the same level of detail and clarity as a television screen. This is still some way off, but it has not stopped computer giants like Google and Apple from attempting to develop similar technological advancements. Google's Project Glass is remarkable similar, with the only difference being that its display is projected using a pair of glasses rather than a lens, whilst Apple is reported to have patented similar technologies.

Prior to this point, researchers have only been able to create a LED lens that displays a single pixel. However, the technology behind this new development offers the ability to display a large range of pixel sizes as well as a significant volume of pixels on a LCD display. To show off the technology, the prototype shows a large dollar sign across the entire curved surface of the lens.

Conceptually, an image could be displayed on the lens in order to see scrolling text messages or emails that have been sent to a smartphone. Even more interesting, GPS driving directions could actually appear in the field of vision while someone is

operating a vehicle.

In the medical field, these lenses could be used to limit the amount of light a person can see after they experience a form of trauma to one of their eyes. That could also be programmed to naturally allow more light into the damaged eye as the healing process progresses.

Researchers also indicated that the technology could create adaptive contact lenses that lighten or darken depending on the sunlight in the immediate area. Similar to eyeglasses that are coated with a light-transitioning material, the contact lens would provide the same function as a pair of sunglasses when outside. In addition, people could utilise the lenses to cosmetically change the color of their eyes and select different colours at any time using a mobile application.

Current LED contact lens technology limits the amount of pixels able to be displayed on the surface of the contact lens. However IMEC's innovative LCD-based technology allows for the complete pixelation of the complete entire displayed surface area to be used.

The initial prototype, still very rudimentary in its abilities, is similar to an electronic pocket calculator. Researchers foresee the next generation prototype as a fully autonomous electronic contact lens, embedded with a display that can be used for medical purposes.

Scientists initially envisioned this discovery for medical purposes perhaps to control the light transmission toward the retina

in the eye in case of a damaged iris. However it may have broader consumer and civilian applications as well.

The military applications are obvious, giving soldiers on the ground computer aided technology available right within their field of vision.

As opposed to LED-based solutions which could only muster a few pixels, the newly-developed screen can pack enough to display graphics that cover a contact. In its current form, the display can show simple patterns, and demonstrates the technology with a simple dollar sign. What appears on the lens would not be visible to folks who wear it, however, since eyes cannot focus at such a close range. Despite the limitation, researchers are trying to tackle the focusing issue and are assessing the feasibility of a version that would effectively act as a heads-up display.

Many research institutions are working on electronics that can be worn on the surface of the eye. While there is the possibility of having a private display overlaid on your vision, there are other applications as well. An electronic contact lens could monitor the eye for problems like cataracts, and a safety lens could block out unwanted radiation, acting as automatic sunglasses.

There are many problems to overcome, however: Among other things, power must be provided, the display must be itself extremely small and durable and it must fit the shape of the eye.

But there are also many solutions. Power can safely be provided

wirelessly, as recent tests showed. The miniaturisation and encapsulation of the electronics is an ongoing process, but critical milestones were reached years ago. But the Ghent's Centre for Microsystems Technology researchers have created a monochrome display with hundreds of pixels that curves spherically, allowing it to be worn on the eye.

The prototype display shows a dollar sign, which is both a fun nod to cartoon characters and a way of showing off the resolution of the display. At the moment, the display cannot become totally transparent or totally opaque, which may reduce its usefulness in some situations but that, is just another technical hurdle to be addressed.

By adapting the patterning process of the conductive layer, this technology enables applications with a broad range of pixel number and sizes, such as a one pixel, fully covered contact lens acting as adaptable sunglasses, or a highly pixelated contact lens display.

Future

In the future, the researchers envision fully autonomous electronic contact lenses embedded with this display.

These next-generation solutions could be used for medical purposes, for example to control the light transmission towards the retina in case of a damaged iris, or for cosmetic purposes such as an iris with a tunable colour. In the future, the display could also function as a head-up display, superimposing an image onto the user's normal view. However, there
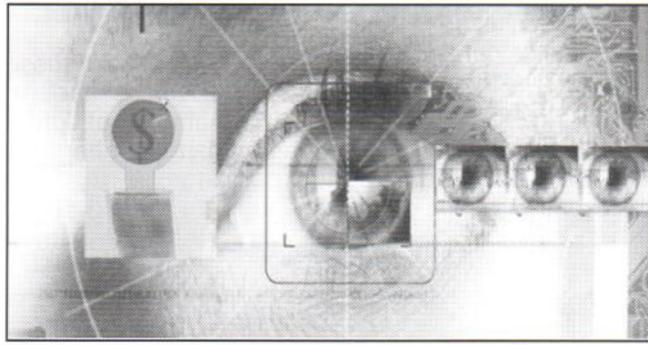
Figure 2: LCD Contact Lens

are still hurdles to overcome for broader consumer and civilian implementation.

The technology could be leveraged for medical purposes, such as controlling light transmission to the retina when the iris is damaged, cosmetic uses and Heads Up Displays (HUDs). With the technology's foundation established, it is expected that real-world applications are potentially a few of years away.

Future research could go in multiple directions. Biocompatibility, or making sure the device can be used safely, is one thing to confirm. The power source for the display must also be considered; there are several options, but because the display uses so incredibly little power, a tiny solar cell might actually be able to pull it off.

This achievement is said to have potential widespread applications in medical and cosmetic domains.

Bringing a bit more of a science fiction feel into the equation is also the suggestion that at some point, the contact lens display can also be used to superimpose images into the wearer's vision. Both cosmetic and medical functions can, theoretically, be provided by the LCD-

based contact lens display with later prototypes. For now, researchers are working on refining the technology and while giving us a glimpse into what the future.

This will never replace the cinema screen for films. But for specific applications it may be interesting to show images such as road directions or projecting text messages from the smart phones straight to the user's eye.

Retina Implant

It is no miracle cure, but new research into retinal implants is showing promising results. Patients in the UK and Hong Kong have been restored rudimentary sight after years of blindness through the use of light-sensitive microchips in the eye.

The idea of a retinal implant is not new, and studies reach back 10 to 15 years, but the advancements in science and technology is helping where such a device may actually become a prescribed treatment. The current tests, by German medical research company Retina Implant AG, show that not only is the procedure safe, but even in an early state it can have highly beneficial results for the visually impaired.

Patients are all receiving experimental implant treatment for retinitis pigmentosa. The condition causes the light-sensing retina at the back of the eye to deteriorate, leading to blindness but leaving the optic nerve and vision-processing portions of the brain intact. Of the various forms of blindness, retinal degeneration is the most promising for treatment, as replacing or repairing other parts of the visual system can be far more complicated.

Retinal implants perform the duties of the rod and cone cells in the retina, detecting light and reporting it to the other cells, which then carry that information to the brain. The tiny implant being tested on these patients is controlled and powered by a second chip implanted behind the ear — a more accessible location for plugs and buttons than inside the eye.

Retina Implant AG

The image produced by the sensor is low-resolution even under ideal conditions and with the brain interpreting the data correctly, but the patients reported various positive effects. They were all able to orient themselves towards light sources, determine basic shapes up close, and one man even claims it has restored his ability to dream in colour.

These clinical trials are expected to last a year if there are no problems, and even if all goes well there are many more obstacles to overcome. But the rapidly advancing research going on worldwide indicates that it is only a matter of time.

Optical communications make data centres more efficient, more powerful

Major data centres and supercomputers will soon be more cost and energy efficient, and at the same time will be even more powerful. Fraunhofer scientists and 17 partners from business and research in the European Union have set themselves this ambitious goal in the "PhoxTroT" project. The key is optical data transmission. Over the next four years, the project partners will be studying synergies between existing solutions as well as developing new technologies and strategies

Gigantic data centres of cloud providers consume energy at an extraordinary rate. For example, Google's server farms process many petabytes of data and they consume 260 million watts, enough power for a city of 200,000 households. The need to save energy is equally powerful. These facts led the European Union to initiate the PhoxTroT project, coordinated by the Fraunhofer Institute for Reliability and Microintegration IZM in Berlin.

The goal is to cut the energy consumption by at least 50 per cent, while simultaneously doubling the capacity of data connections to 2 terabits per second (Tb/s). This would also significantly reduce costs.

Data transmission using light consumes only a fraction of the energy

Optical data transmission only needs a fraction of the processes that prior systems require.

that conventional methods need. The technologies for photonic transmission already exist and have been thoroughly researched.

"The novelty of the PhoxTroT project is that we are now researching the synergies between the various technology components and are combining them with each other in a new research plan based on the 'mix-and-match' principle," explains project coordinator Dr.Tolga Tekin from IZM.

By the end of the project, entirely new technologies are expected to emerge that can guarantee a photonic data connection that remains constant across hundreds of kilometres. For this purpose, the project partners are developing three prototypes for various hierarchy levels. They will realise the optical transmission on a

printed circuit board ("on-board"), "board-to-board" and also "rack-to-rack". By combining these interfaces, it will also be possible to bridge longer distances within the foreseeable future.

In a further step, the project partners will engineer single-mode solutions that integrate optical chips onto one circuit board. This allows for signal transmission via one optical path, instead of multiple paths as before. Thus, these technologies are particularly well-suited for the transmission of extremely high data rates across long distances.

PhoxTroT: a major project

The European Union is providing EUR 9 million funding for the four-year research project, which began in October 2012. Eighteen companies and scientific installations

from all over Europe are involved, and coordinating this project is a major task for IZM, as Tolga Tekin reports:

"The greatest challenge is coordinating partners from a wide range of disciplines. On the one hand, for example, there are the technology experts, and on the other hand, systems experts. We have to bring them all to one table, establish an understanding between them and guide the communications into the right channels."

This is comparable with dancing, which requires coordination, creativity and stamina, so it is appropriate that the project is called PhoxTroT.

The project partners include Fraunhofer IZM, Fraunhofer HHI, Vertilas GmbH, Xyratex Technology Ltd., ams AG, Meadville Aspocomp International Limited, AMO GmbH, National Technical University of Athens, DAS Photonics SL, Phoenix B.V., Centre for Research and Technology Hellas, Compass Electro Optical Systems Ltd., Bright Photonics BV, Computer Technology Institute and Press - "Diophantus", Centre National de la Recherche Scientifique, Karlsruhe Institute of Technology, University of Southern Denmark, Universitat Politècnica de València, Interuniversitair Micro-Elektronica Centrum vzw.

A tiny hearing aid to wear on your back teeth

Researchers have developed a hearing aid for people deaf in one ear that users can wear on their back teeth. The system, now being tested in Britain, works by re-routing sounds from the deaf ear to the working one.

Standard hearing aid devices often do not work for people with single-sided hearing loss because their inner ear or nerves are too badly damaged. The new hearing aid, called the SoundBite, uses the bones of the head to conduct the sound to the working ear, the *Daily Mail* reported.

When sound waves enter the ear, they travel to the eardrum and make it vibrate. These vibrations then go to the inner ear, which contains around 20,000 tiny hair cells. These cells move in response to the vibrations, and this movement is converted into electrical impulses that are sent along nerves to the brain, which interprets them as sounds. With standard hearing aids, an external microphone picks up the sound, amplifies it and delivers into the ear.

The SoundBite consists of a tiny microphone, placed just inside the ear canal of the impaired ear to capture the sound travelling into the ear. These sounds are then sent to a small transmitter, worn behind the ear (and smaller than a conventional hearing aid), which transmits them to a device in the mouth. This device is roughly the size of half a matchstick and loops over the patient's left or right back teeth, a bit like a wire for a dental plate.

Once it receives a sound transmission, the tooth device converts these signals into tiny vibrations, which are imperceptible to the user. The vibrations are conducted via the teeth, through bone, to the working ear, where the sound vibrations are turned into nerve impulses, and sent to the brain.

Some types of hearing aid already use bone conduction, known as bone-anchored hearing aids. With these devices, a small titanium plate is inserted into the back of the skull, behind the ear. The plate detects sound vibrations, and sends these through the skull. However, these need to be surgically fitted, and are visible on the outside of the head.

A study published in the journal *Otology & Neurotology* showed that the new device improved the ability of patients to understand speech in noisy environments by an average of 25 per cent, and that for one third of the patients, the improvement exceeded 30 per cent.

A year-long trial of the device, which costs around 600 pounds, is now under way at various centres across Europe, including University Hospital Southampton.

New device enables heartbeat to power pacemaker

Researchers at the University of Michigan Department of Aerospace Engineering and U-M's C.S. Mott Children's Hospital Congenital Heart Centre, have developed a new 'promising' device that uses energy from a beating heart to power a pace-maker, eliminating the need for surgeries to replace batteries.

A study presented recently at the American Heart Association's Scientific Sessions 2012, suggests that patients could power their pace-makers — eliminating the need for replacements when batteries are spent.

In a preliminary study, the researchers at the University of Michigan Department tested an energy-harvesting device that uses piezoelectricity — electrical charge generated from motion.

According to the American Heart Association's report, the researchers measured heartbeat-induced vibrations in the chest. Then, they used a "shaker" to reproduce the vibrations in the laboratory and connected it to a prototype cardiac energy harvester they developed.

Measurements of the prototype's performance, based on sets of 100 simulated heartbeats at various heart rates, showed the energy harvester performed as the scientists had predicted — generating more than 10 times the power than modern pacemakers require.

The approach is a promising technological solution for pacemakers, because they require only small amounts of power to operate, says M. Amin Karami, Ph.D., lead author of the study and research fellow in the Department of Aerospace Engineering. Piezoelectricity might also power other implantable cardiac devices like defibrillators, which also have minimal energy needs, he said.

Today's pacemakers must be replaced every five to seven years when their batteries run out, which is costly and inconvenient, Karami said.

"Many of the patients are children who live with pacemakers for many years," he said. "You can imagine how many operations they are spared if this new technology is implemented.

The next step will be implanting the energy harvester, which is about half the size of batteries now used in pacemakers, Karami said. Researchers hope to integrate their technology into commercial pacemakers.

Indian inventor wins cash to develop Braille phone

29-year-old Indian inventor, Sumit Dagar of India has won Young Laureates Rolex Award with 50,000 dollars to help him make a new low-cost mobile phone for the blind that uses a Braille display.

Dagar is developing a phone with a display panel of tiny bumps that can be varied in height independently to form characters in Braille, a system of reading for blind people invented by a Frenchman in 1824.

"In design, there is a certain negligence for minority groups as compared with the majority," said Dagar,

explaining why he had decided to take on the challenge. "Design is something that bridges the gap between users and technology," he added.

He said the first prototype using a Braille screen that can display text messages and names would be ready in the next six months, with a "smartphone" incorporating maps and GPS technology part of his future plans.

The prototype is "the phone of the 1990s. It's just that the display is in Braille," he explained. Phones that convert text into speech are already available for the estimated 285 million people worldwide who are blind or visually impaired, and Dagar faces competition from other designers vying to integrate Braille technology.

South Korean manufacturer Samsung won a design award in 2006 for a prototype Touch Messenger phone that was developed in China allowing users to send and receive text messages in Braille. But no Braille phone has been

commercialised, said Dagar.

Experts say the Apple iPhone has also been revolutionary for many blind people in the rich world because of the number of applications designed for them, such as one that announces their exact location.

India is home to about one fifth of the world's blind people, according to the World Health Organization. A World Bank report published in 2007 found that disabled adults in India were much less likely to be employed than the general population, with just over a third, or 38 percent, in work.

Sensor detects explosives on sea floor

Scientists have developed a sensor to detect undetonated explosives on the sea floor, based on a technology used to find mineral deposits underground.

The sensor was developed as part of a project with US Government agency, the Strategic Environmental Research and Development Program (SERDP) and US-based research organisation Sky Research.

The method for finding undetonated underwater explosives is very similar to that used to detect underground mineral deposits, says CSIRO electrical engineer Dr Keith Leslie.

"Our highly sensitive sensor - the high temperature superconducting tensor gradiometer - delivers significantly more information about the target's magnetic field than conventional sensors used for this type of detection," he said.

"It provides data on the location, characterisation and magnetic qualities of a target - whether it is a gold deposit or an explosive."

Over 10 million acres of coastal waters are contaminated by undetonated explosives, according to SERDP. Typically these small explosives rust and

corrode at sea, making them even more dangerous.

"The marine environment is difficult to sample due to electrical currents produced by waves, which affect underwater magnetic fields," Dr. Leslie said.

"In mineral exploration, near surface deposits are being exhausted, leading our search for minerals deeper underground, where targets are more difficult to detect with traditional surface and airborne measurements."

Our sensor can provide valuable geological information that discriminates between prospec-

tive and non-prospective areas or targets. It avoids unnecessary drilling and minimises the risk of overlooking valuable mineral deposits.

Eventually the technology may renew exploration efforts at abandoned sites where drilling programs were based on insufficient or inaccurate information. It also has the potential to help clear landmines.

The sensor has been proved in a stationary laboratory environment. Trials have been conducted to prove it in motion, in preparation for anticipated underwater trials.

PolyU's breakthrough in advancing next-gen hi-speed optical communication networks

The Photonics Research Centre at The Hong Kong Polytechnic University (PolyU) has recently achieved a breakthrough in researching high-speed optical communications by increasing the speed of optical communication networks by 40 times.

This breakthrough has attracted the attention of Huawei Technologies Co. Ltd., a leading global Information and Communications Technology (ICT) solution provider, to provide funding and equipment for further developing the leading-edge technology and filing patents.

The research was jointly undertaken by Professor Alex Wai, PolyU Vice President (R&D), Professor Chao Lu of the Department of Electronic and Information Engineering, Professor Hwa-yaw Tam and Dr Alan Pak-tao Lau, Chair Professor and Assistant Professor of the Department of Electrical Engineering respectively.

"With this breakthrough, one can download over 177-hours-worth of YouTube video in a second," Professor Wai said.

The development of optical communications has made steadfast advancement since the invention/discovery of fibre optics by Professor Charles Kao, Nobel Laureate in Physics and former Vice-Chancellor

of The Chinese University of Hong Kong. Over the years, fibre optics has formed the backbone of modern information technology.

With the increasing dominance of smart mobile devices and bandwidth-hungry applications such as cloud computing, YouTube, Facebook and other social network activities, the overall speed demand are increasing at an unprecedented rate and major telecommunication service providers are incessantly looking for technological breakthroughs that could further push the network speed limits.

The speed of optical communications largely depends on distortions of the information signals generated from its interactions with silicon dioxide molecules that make up optical fibre. However, the higher the speed of information transmission, the more likely the signal will be distorted.

When such distortions are large enough, detection errors will occur at the receiving end. If the information cannot be correctly transmitted, the whole communication system will be considered useless.

Currently, the most commonly deployed optical communication systems operate at 10Gb/s, i.e. 10 billion binary digits (bits) per second.

Professor Lu and Dr Lau have cleverly combined optics, statistics and signal processing technology that greatly increase the speed of network by 40 times, i.e. 4 trillion bits per second.

In particular, based on experimental observations, they found that distortions of the light signal generated from silicon dioxide molecules inside an optical fibre are not totally random. In fact, the distortions follow certain statistical characteristics.

PolyU researchers

therefore proposed the use of "coherent detection," in which optical signal is first converted into electrical signal so that the data information can be preserved. This is followed by the use of more mature electronic signal processing technologies extensively used in all computers, smartphones and the like. This latest technological advance has attracted the attention of Huawei.

A Huawei spokesperson said, "A lot of universities have come up with innovative ideas that sound really out-of-the-box at first glance. However, most of them cannot overcome physical and cost constraints that the idea cannot make their way to a commercial product. From the industry standpoint, the deliverables of this PolyU research are cost-effective and can meet the practical needs of our society, bringing real benefits for mankind."

"We are pleased to see that leveraging on its strengths in scientific research, PolyU has successfully developed the fastest optical transmission systems with significant cost effectiveness. This really helps us to maintain our lead in the industry and lay down a solid foundation for our sustained growth in the future," the spokesperson added.

China preparing to grow vegetables on Mars

Chinese astronauts are preparing to grow fresh vegetables on Mars and the moon after researchers successfully completed a preliminary test in Beijing.

The system, which relies on plants and algae, is expected to be used in extra-terrestrial bases on the moon or Mars. Participants in the experiment could "harvest fresh vegetables for meals", Xinhua quoted Deng Yibing, a researcher at Beijing's Chinese Astronaut Research and Training Centre, as saying.

According to Deng, a cabin of 300 cubic metres was established to provide sustainable supplies of air, water and food for two participants during the experiment. The cabin, a controlled ecological life support system (CELSS) built in 2011, is a model of China's third generation of astronauts' life support systems, which is expected to be used in extraterrestrial bases on the Moon or Mars.

The introduction of a CELSS seeks to provide sustainable supplies of air, water and food for astronauts with the help of plants and algae, instead of relaying on stocks of such basics deposited on board at the outset of the mission. Advance forms of CELSS also involve the breeding of animals for meat and using microbes to recycle wastes.

Four kinds of vegetables

Chinese astronauts are preparing to grow fresh vegetables on Mars ...

were grown, taking in carbon dioxide and providing oxygen for the two people living in the cabin. They could also harvest fresh vegetables for meals, Deng said.

The experiment, the first of its kind in China, is extremely important for the long-term development of China's manned space programme, Deng added.

Scientists from Germany also participated in the experiments.

"Chinese astronauts may get fresh vegetables and oxygen supplies by gardening in extra-terrestrial bases in the future," the report said, adding that the experiment was the first of its kind in China.

China has said it will land an exploratory craft on the moon for the first time next year, as part of an ambitious space programme that includes a long-term plan for a manned moon landing. China has been ramping up its manned space activities as the United States, for long the leader in the field, has scaled back some of its programmes, such as retiring its iconic space shuttle fleet.

Specs that can prevent jet lag, cure insomnia

Researchers have developed new 'time-control ' spectacles which they claim reset the body clock to overcome jet lag and insomnia. The high-tech glasses emit a soft green glow which works on the human body clock to change our sleep patterns.

Using the device, called the Re-Time, means long-haul air passengers can step off the plane feeling fresh, even after flying over long distances, say the sleep researchers who created it.

Inventor of the glasses, professor Leon Lack said the glasses could also help insomnia sufferers, keep shift workers more
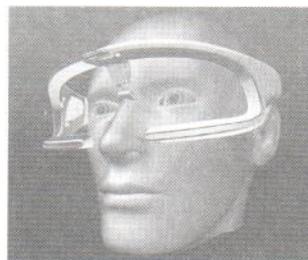
alert and get teenagers out of bed in the morning, according to a report in the 'Daily Mail'.

"Using a light device allows you to transition your body clock to a new time zone in small steps. This eliminates the sudden change people experience after flying and reduces the symptoms of jet lag," said Lack from Flinders University in Adelaide, South Australia.

Scientists say the light exposure changes the behaviour of a gland at the base of the brain which controls the body clock.

It sends signals to the rest of the body, triggering the production of hormones, which create daily cycles known as circadian rhythms. Those who want to sleep and wake up early should wear the device for 50 minutes in the morning, while those who want to sleep and wake late should wear them for 50 minutes before bed to delay the body clock.

The battery powered glasses, on sale in the UK for £162, can be worn while completing daily tasks.

Hitachi to cease production of chips by 2014

Hitachi, Japan announced recently that it will discontinue the manufacturing of semiconductors for information and telecommunication hardware.

Hitachi will terminate the manufacture of semiconductor integrated circuits currently performed by the micro device division under the Information & Telecommunication Systems Co. on March 31, 2014.

Going forward, a variety of steps will be taken to bolster the global competitiveness of the Information & Telecommunication Systems business. The division will focus on development, design and quality assurance of chips primarily for Hitachi Group products, including information and telecommunication hardware. Production-related human resources and other management resources will be reallocated throughout the Hitachi Group.

Hitachi first established the device development centre in 1975, with the aim of developing semiconductor integrated circuits for information and telecommunication products. In 2004, the centre was incorporated under the micro device division as part of organisational reforms.

Since then, the centre has been engaged in the design, development, manufacture and sale of semiconductor integrated circuits for the Hitachi Group and external customers utilised in information and telecommunication devices, as well as for application in the measurement, medical and industrial equipment fields.

The semiconductor industry has seen an increasingly horizontal division of labour in terms of development, design and manufacturing in recent years. The same holds true for Hitachi, which has pushed ahead with the external outsourcing of production of certain products alongside efforts to curb manufacturing costs and boost production efficiency in a bid to maintain and enhance business competitiveness.

It was in this climate that the decision was made to terminate and outsource externally the manufacture of semiconductor integrated circuits presently performed under the micro device division.

The intent of this move is to optimally allocate management resources to bolster the competitiveness of the entire Information and Telecommunication Systems business.

Going forward, Hitachi will promote a business specialising in the development, design and quality assurance of LSIs primarily for Hitachi Group products, including information and telecommunication hardwares.

In parallel, production-related human resources and other management resources will be optimally allocated throughout the Hitachi Group. Details regarding the reassignment of human resources will be examined in the process of moving forward with this decision.

NASA and European Space Agency test 'interplanetary Internet'

Accrding to NASA and the European Space Agency, they have tested an "interplanetary" communication network replicating some of the functions of the Internet.

As part of the experiment, the crew of the International Space Station Expedition used a NASA-developed laptop to operate a small LEGO robot at the European Space Operations Center in Darmstadt, Germany.

"The demonstration showed the feasibility of using a new communications infrastructure to send commands to a surface robot from an orbiting spacecraft and receive images and data back from the robot," said Badri Younes, deputy associate administrator for space communications and navigation at NASA Headquarters in Washington.

The experiment was a test of a Disruption Tolerant Networking protocol that allows standardized communications similar to the Internet technology.

Unlike the TCP/IP protocol used for worldwide Internet connections, DTN was designed to deal with disconnections, errors and delays of signal that would be experienced during interplanetary communication, NASA said in a release.

"In DTN, data move through the network 'hop-by-hop.' While waiting for the next link to become connected, bundles are temporarily stored and then forwarded to the next node when the link becomes available," NASA said.

Eventually the DTN system could eventually become the prime method of communicating with deep space missions as well as a way to control unmanned missions from long distances, the space agency said.

A paper-thin nano-material stops bullets

A team of mechanical engineering and materials scientists from Rice University and Massachusetts Institute of Technology (MIT) have created special materials that were able to stop bullets in the lab. The new paperthin bullet-proof super material can self-assemble into alternating glassy and rubbery layers.

The nanomaterial could translate into safety beyond vests. These advancements could accelerate progress on protective coatings for satellites and even jet engine turbine blades, researchers said.

The type of material, called a structured polymer composite, can actually selfassemble into alternating glassy and rubbery layers, the Discovery News reported.

While performing ballistic tests on the material at MIT's Institute for Soldier Nanotechnologies , the 20-nanometre-thick layers were able to stop a 9-millimetre bullet and seal the entryway behind it, according to a Rice University .

However, one of the challenges to making thinner and lighter protective gear is being able to test the materials effectively in the lab.

Researchers need to know precisely why those nanolayers are so good at dissipating energy, but analysing the polymer can take days. The MIT-Rice team also came up with an innovative testing method, where they shot tiny glass beads at the material. Although the beads were only a millionth of a meter in size, they simulated bullet impacts.

Wearable camera records every minute of your life

A new wearable camera has been designed that takes a picture every 30 seconds to allow owners to record their daily lives. The new device, named Memoto, has become the latest technogical hit on Kickstarter, the 'crowd funding' website.

So far, the gadget, branded as 'the world's smallest wearbale camera' has attracted over 44,000 dollars of its 50,000 dollars funding target from more than 250 gadget fans keen to capture a digital record of their entire lives.

The tiny device is designed to be clipped to clothes or worn on a necklace, according to a Telegraph reports.

The device has a five megapixel digital camera, and also features a GPS chip to keep track of owners' locations and automatically log and organise pictures via a specially-created iPhone and Android apps.

According to the paper, the Swedish start-up behind the project described Memoto as a "lifelogging" technology, and said they plan to ship its first finished cameras in February next year.

Return trip to Moon offered for at less than $2 billion!

Two former top NASA officials-turned entrepreneurs, have set up a company - The Golden Spike Company - to offer a "return trip to Moon at less than two billion dollars, by the end of decade.

The Golden Spike Company is a reference to the spike that completed the first railway to traverse the United States and aims to take part in the new wave of private spaceflight, as well as open up new frontiers by getting humans back into outer space.

The company aims to sell flights "to nations, individuals and corporations with lunar exploration objectives and ambitions."

The two entrepreneurs behind the company include a former Apollo flight director, Gerry Griffin, who also directed NASA's Johnson Space Center, and planetary scientist and former NASA science chief Alan Stern.

They had been working on their business plan for the last two years, and unveiled it a day before the 40th anniversary of the launch of Apollo 17, the last mission that put humans on the moon.

The company estimates it will cost $1.5 billion for a round-trip expedition to the moon, a price tag it says is roughly equivalent to the amount government-funded space programs spend to send robots there now.

Golden Spike said it can reduce costs by "capitalizing on available rockets and emerging commercial-crew spacecraft."

Spaceflight, long the domain of national governments, has moved toward increased commercialization in recent years, with private companies for the first time successfully launching rockets into orbit.

NASA, to cut down costs stopped its space shuttle programme in 2011 and instead paid for space on Russian craft to get people and supplies to the International Space Station -- and, more recently, on one built and operated by SpaceX that carried just cargo.

The US Apollo space program ran from 1963 to 1972, and included the iconic Apollo 11 mission that saw Neil Armstrong take the first steps on the moon. The last mission launched on December 7, 1972, and returned to Earth 12 days later, after astronaut Eugene Cernan took the last steps on the moon by a human to date.

Challenge for chip designers of future

A team of physicists at McGill University, in collaboration with researchers at General Motors R&D, have shown that electrical current may be drastically reduced when wires from two dissimilar metals meet. The surprisingly sharp reduction in current reveals a significant challenge that could shape material choices and device design in the emerging field of nanoelectronics.

The size of features in electronic circuits is shrinking every year, thanks to the aggressive miniaturisation prescribed by Moore's Law, which postulated that the density of transistors on integrated circuits would double every 18 months or so. This steady progress makes it possible to carry around computers in our pockets, but poses serious challenges.

As feature sizes dwindle to the level of atoms, the resistance to current no longer increases at a consistent rate as devices shrink; instead the resistance "jumps around," displaying the counterintuitive effects of quantum mechanics, says McGill Physics professor Peter Grütter.

"You could use the analogy of a water hose," Grütter explains. "If you keep the water pressure constant, less water comes out as you reduce the diameter of the hose. But if you were to shrink the hose to the size of a straw just two or three atoms in diameter, the outflow would no longer decline at a rate proportional to the hose cross-sectional area; it would vary in a quantised ('jumpy') way."
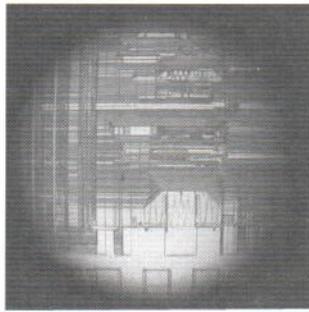
This "quantum weirdness" is exactly what the McGill and General Motors researchers observed, as described in a new paper appearing in Proceedings of the National Academy of Sciences. The researchers investigated an ultra-small contact between gold and tungsten, two metals currently used in combination in computer chips to connect different functional components of a device.

On the experimental side of the research, Prof. Grütter's lab used advanced microscopy techniques to image a tungsten probe and gold surface with atomic precision, and to bring them together mechanically in a precisely-controlled manner. The electrical current through the resulting contact was much lower than expected. Mechanical modelling of the atomic structure of this contact was done in collaboration with Yue Qi, a research scientist with the General Motors R&D Center in Warren, MI.

State-of-the-art electrical modelling by Jesse Maassen in professor Hong Guo's McGill Physics research group confirmed this result, showing that dissimilarities in electronic structure between the two metals leads to a fourfold decrease in current flow, even for a perfect interface.

The researchers additionally found that crystal defects — displacements of the normally perfect arrangement of atoms — generated by bringing the two materials into mechanical contact was a further reason for the observed reduction of the current.

"The size of that drop is far greater than most experts would expect - on the order of 10 times greater," notes Prof. Grütter.

The results point to a need for future research into ways to surmount this challenge, possibly through choice of materials or other processing techniques.

"The first step toward finding a solution is being aware of the problem," Grütter notes. "This is the first time that it has been demonstrated that this is a major problem for nanoelectronic systems."

EU parliament votes against ITU's control over internet

The European Parliament has passed a resolution protesting plans by the International Telecommunications Union to seize regulatory control of the internet.

The resolution, which was passed by a large majority of EP reads: "(The European Parliament) believes that the ITU, or any other single, centralised international institution, is not the appropriate body to assert regulatory authority over either internet governance or internet traffic flows,"

During the forthcoming 11-day World Conference on International Telecommunications (WCIT) in the sunshine of Dubai, the ITU will be meeting to discuss the next draft of the internet regulations that have remained unchanged since 1988.

What is worrying the EP, along with an unlikely coalition of Google, the US Republican party, organised labour, and Greenpeace, is that the meeting might try and take over regulatory oversight for internet communications in a closed-door coup. The US government has said it will oppose serious moves to change the current regulatory order, but how effective that will be remains to be seen.

India launches Aadhaar-linked direct cash subsidies transfer programme

by S. Swarn

On new year day, India launched phase one of the much-hyped ambitious Direct Benefts Transfer (DBT) programme. The Aadhaar-linked programme aims to transfer cash subsidies, such as scholarships, pensions, and MNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme) wages and some of the other subsidies, directly to the bank or post office accounts of the identified beneficiaries.

According to estimates, at least 200,000 beneficiaries received cash benefits from the scheme on January 1.

Initially, the government had planned the roll out of the scheme in 51 districts from January 1. The number of districts, however, was first reduced to 43 and later came down to 20, owing to lack of preparedness in many of these districts.

The 20 districts covered in this phase are from 6 states and 2 union

Micro ATM

territory viz. Puducherry and Daman and Diu. The states are: Karnataka, Punjab, Delhi, Madhya Pradesh, Rajasthan and Andhra Pradesh.

Also, of the 26 selected schemes, cash transfers in phase one, was rolled out in seven schemes. Cash benefits in the remaining 19 schemes will be available from February and March,

2013 when the government will cover 23 other districts. The government has stated that food, fertilizer, diesel and kerosene are not being included at present through this scheme.

Game changer

The finance minister, Mr. P.C. Chidambram, who called the programme as "game changer", with

regard to governance and the way the government provides subsidy to people, said, by the end of 2013 the government hopes to rollout cash transfers in all selected schemes in the remaining parts of the country. The government is expecting to implement this scheme in the entire country before the beginning of 2014.

The opening day witnessed direct cash transfer amounting to about Rs. 3.5 million to 8 different banks by the government for transferring them directly into the accounts of the beneficiaries.

Through this scheme the difference between the market price and the subsidized price of a commodity is credited into the account of the beneficiary. For instance, suppose that a person is provided kerosene @ Rs. 15 per litre at a ration shop and its market price is Rs. 28 per litre, then Rs. 13 per litre will be credited into the bank account of that person. This will enable him to buy the kerosene at the market price from the ration shop.

This means that the subsidy expenditure from the government will reach completely to the beneficiary and will eliminate the role of middleman in the entire process.

According to present system the government pays the subsidy amount to the kerosene company and the person buys the kerosene from the ration shop at the subsidized rate.

The government says that every person do not buys the entire ration due to which misuse is done.

The government also says that the cheap kerosene is used in mixing it with high price petrol and diesel like fuel. This not only has adverse effect on the environment but also negatively affects the engine in which the mixture is used.

This scheme is also considered important because at present India spends about Rs. 3 Trillion in subsidies, which is about 3.5% of the country's GDP.

NPCI's Aadhaar payment bridge

The amount to the beneficries is being transferred through the National Payments Corporation of India to eight banks. Aadhaar Payments Bridge System (APBS) set up by National Payments Corporation of India (NPCI) was put to effective use on the first day of Direct Cash Transfer. Transactions pertaining to those

Micro ATMs

beneficiaries whose accounts have already been linked to Aadhaar number were carried out through this platform. There were 1,980 transactions with an amount of Rs. 35.45 Lakhs.

According to NPCI release, the cash transfers were made by the Government Departments through eight banks and there were 23 recipient banks in all for the beneficiaries. The payments pertained mainly to MNREGA, Student stipends, Scholarships, Jananisuraksha and few other District Welfare Schemes.

APBS is a platform which links the Government Departments and their banks on one side and the beneficiary banks and the beneficiaries on the other side. The bankers to Government Departments can submit their transaction files to APBS during

10.00 a.m. to 12.30 p.m. with basic information like Aadhaar Number and amount. On the APBS platform, NPCI switches the transactions to the recipient banks at about 2.00 p.m. to the banks as mapped on the Aadhaar Mapper which is a part of APBS.

The recipient banks in turn credits the accounts of the beneficiaries by 3.00 p.m. The platform has the capacity to process 10 Million transactions per day. Though APBS has started with only one payment cycle per day, multiple cycles would be introduced as the volume increases.

As regards the beneficiaries who do not have Aadhaar Number as yet, banks are in the process of "seeding" the Aadhaar Number in their core banking solution. Once seeding is completed, the transactions can move through the APBS platform. Till that time,

alternate platforms like NPCI's ACH system can be used which can process with both Aadhaar based and Account Number based transaction data.

APBS is one of the seve Payment Services of NPCI.

"With APBS in place, NPCI is not only discharging its role as the umbrella organization fo all retail payment systems in the country, but also sub-serving the national objective of Financial Inclusion." says Shri A.P. Hota, MD & CEO of NPCI

National Payments Corporation of India (NPCI) is the umbrella organization of all retail payment systems in Ind and is set up by the banks in India with the support and guidance from Reserve Bank of India and Indian Banks' Association.

Micro ATMs

The finance minister M Chidambram said that t 7,900 bank branches in these 43 districts will have an onsite ATM an banks have also floated tender for 20 lakh interoperable micro ATMs.

"These micro ATMs wil have facility for biomet scanning and Aadhaar authentication," he said Chidambaram said that initially there will be glitches in operationalising the scheme but the official who are overseeing its implementation, will resolve them.

India emerging as world's fastest growing smart card market — RNCOS

With the global smart card shipments increasing stupendously for the past few years, India, with over one billion population and increasing modern application areas, is emerging as one of the world's fastest growing smart card markets, according to a new research report, "Smart Card Market Forecast to 2014" by RNCOS.

A number of government-run programmes, like Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), e-Passport, and e-driving licence, among others employ smart cards. With these, the smart card market in India is anticipated to grow at a CAGR of around 15% during 2011-2014. The potential areas for smart card applications include rapid transit system, EMV and loyalty cards, and toll and parking smart cards.

Growing shift towards Euro pay, MasterCard, and VISA (EMV) is one of the key factors further promoting the adoption of smart cards across the globe. The EMV migration facilitates the mitigation of losses being incurred due to frauds and security issues. The advent of innovative technological applications is likely to provide a further boost to the global smart card industry.

According to the report,

RNCOS
Industry Research Solutions

the concept of chip-based smart cards is new in developing countries like India where most of the cards used are magnetic ones. Also, the demand for mobile SIM cards has been growing at a double-digit rate in emerging markets like China and India. This development has indeed improved the profit margins of smart card and chip vendors.

Beside India, the report also covers other geographical regions which are showing impressive growth in the adoption of smart card technologies. Providing valuable information and prudent analysis of the global smart card industry, the research presents an insight into the current market trends, industry drivers, and challenges which help understand the market structure.

According to the report, the telecom sector remains the leading area of application for smart cards throughout the world. The chief driver for the smart card industry is SIM card usage in every mobile phone along with prepaid (stored value memory cards) cards. With rapid mobile penetration and ever increasing buying frequency, the market for smartcards shall remain robust in the times to come. The unit shipment of smart cards in telecom sector is projected to surge at a CAGR of around 11% during 2011-2014.

Also, the rapid deployment of 3G in developing countries like India and China is anticipated to lift up the shipments of smart cards in the telecom sector. With the rising demand for interoperability, mobile operators throughout the world are looking at value-added services (VAS).

This is an excellent opportunity for the SIM card manufacturers as the mobile operators, at present, require superior SIM cards with better memory and faster downloading abilities to support the VAS. These and many other upcoming developments are expected to boom the market.

India to soon start issuing e-passports to citizens

While world over several countries are already issuing chip based electronic passports to their citizens, India is still in the process of simplifying the process of obtaining passports. A few countries have made it mandatory that foreigners who want to enter into their land should have e-passports.

Indian ministry of external affairs recently announced that the government is all set to issue electronic/biometric (e-passports) to all eligible citizens to help prevent fake passports. The Union home ministry and finance ministry have already given approval for issuing e-passports to the applicants in India.

According to sources, the tenders process for filing e-passports is completed and the bidder has to be selected.

e-passports is a plastic card with electronic chip and will contain all the information about the holder, which is usually printed on the present day paper passport document such as name, date of birth etc. e-Passport will also contain the iris and fingerprints of the passport holder.

Under the e-pasport scheme under Tatkal service, the passports will be issued to the applicants within three days. According to the new scheme it will take 45 minutes to submit online application. Earlier it was taking 45 days to submit the application.

PIL challenges AADHAAR's legality in SC

The Supreme Court on November 30 sought the Centre's response to a plea challenging the implementation of the 'AADHAAR' scheme, aimed at providing a unique identity number (UID) to all Indians, without any legislative nod.

A public interest litigation petition, filed by the retired Karnataka High Court judge, Justice K S Puttaswamy and advocate Parvesh Khanna has questioned the government's decision of issuing AADHAAR numbers to citizens while the National Identification Authority of India Bill, 2010 is pending before the Rajya Sabha where it was introduced on December 3, 2010.

The Bill, for the purpose of giving legal backing to the scheme, was referred by the Rajya Sabha to the Standing Committee (Finance) which had rejected it by overwhelming majority on December 11, 2011, the petitioners have said.

A bench comprising of Chief Justice Altamas Kabir and Justice J Chelameswar issued notice to the Ministry of Finance, Planning Commission and the Unique Identification Authority of India (UIDAI), set up to implement the scheme, seeking their replies on the contention that the Parliament was "circumvented" in implementation of the scheme.

The petitioners in their plea have sought directions to the government to prevent it from acting upon its notification of January 28, 2009 and from by-passing or circumventing the passage of the Bill by Parliament after discussion, debate and voting.

The government through its notification of January 28, 2009 had set up the UIDAI for issuance of AADHAAR numbers and cards to all Indian citizens. The UIDAI would maintain a database of Indian residents, containing their biometric and other details.

The PIL alleged that the decision to implement the scheme — meant to eliminate corruption and middlemen in welfare distribution — was an attempt to circumvent parliamentary discussion and the process of legislation.

The petitioner said the scheme was introduced through an executive order in January 2009. The Prime Minister introduced the National Identity Authority of India Bill in 2010 to make the Unique Identification Authority of India (UIDAI) a statutory body. Though the bill was rejected by the Parliamentary Standing Committee in 2011, the government persisted in enrolling residents through executive action, which was "unconstitutional and arbitrary."

Senior counsel Anil Divan, who appeared for the petitioner, argued that the implementation of the scheme when the bill was pending in Parliament was a matter of great constitutional importance. The scheme impinged on the right to privacy of individuals, as the confidentiality and security of biometric information private agencies collected were not ensured.

The government's action impinged on the fundamental rights of citizens — in particular Article 14 — especially when the expenditure was likely to run into thousands of crores of rupees, the petition said. The government's legislative powers were restricted to issuing ordinances (under Article 123 and 213), and it could not circumvent the legislative procedure through executive action. Its decision to go ahead with the scheme was malafide, intended as it was to avoid parliamentary discussion, especially after the Standing Committee rejected legislation.

Under the scheme, even non-citizens were likely to get benefits like cash transfers and illegal migrants were likely to be legitimised. This would jeopardise national security, he contended.

"Whether the executive power vested in the Union under Article 73 of the Constitution can be exercised by avoiding the consideration of a Bill on the same subject pending before the Parliament and after its rejection by the Standing Committee.. and circumventing the Parliament?", the plea asked.

After hearing senior counsel Anil Divan, the Bench also issued notice on the interim application for a stay on the implementation of the scheme.

Panel reiterate the need for fresh legislation

The parliamentary standing committee on finance chaired by senior Bharatiya Janata Party (BJP) leader Yashwant Sinha on December 6, reiterated the need for fresh legislation on the unique identification (UID) project despite assurances from the government.

The ministry of planning addressed various issues pertaining to the need for project security, privacy and budgetary concerns in its response to the earlier report of the committee.

The "ministry of law and justice as well as the attorney general of India have opined that action to enroll residents by UIDAI (Unique Identification Authority of India) in terms of the executive notification issued on 28 January 2009 is valid," it told the committee.

It added that the government is pushing for a UID legislation as it felt a regulatory structure supported by a legal framework would lead to more effective functioning of UIDAI.

"Particularly, any violations of security and privacy of UID data on the part of any of the stakeholders that may arise in the future, could be dealt with in a more rigorous and firm manner under a defined legal mechanism which would be possible by enacting the proposed National Identification Authority of India Bill, 2010," it added in its response.

However, the committee said that the government should urgently address the various issues pointed out by it in the earlier report and "bring forth a fresh legislation before Parliament".

Visa launches new payment service in India linking with UID

Visa has announced a partnership with five of India's leading banks to provide Aadhaar holders, the Indian national identity system, access to a Visa account. The system will provide tens of millions of Indians with access to financial services and electronic payments for the first time.

The new account, called "Saral Money" uses biometric information, such as fingerprints, to verify and authorise payments. Both the account and the associated biometric data are securely hosted by the new national identity system, which is run by the Unique Identification Authority of India (UIDAI).

This new initiative brings together Visa, UIDAI, Axis Bank, HDFC Bank, ICICI Bank, Indian Overseas Bank and the State Bank of India to solve a long-standing problem of how to authenticate those citizens without an existing bank account or adequate forms of identity to prove they are who they say they are.

This problem has long hindered the ability of banks to expand and of consumers to pay safely and securely. It has also restricted the government's agenda of promoting and growing electronic payments.

Now, by linking Visa

accounts to the national identity system, customer identities can be verified via biometric recognition data stored centrally, for instance by running fingerprint scans at newly designed micro-ATM's when they wish to pay or withdraw cash.

The Micro ATMs are portable biometric Point-of-Sale devices and laptops designed to overcome the lack of bank branches in parts of the country. Visa serves as the network which links the banks to the government's identity database and is currently the only authorised international payment network for the initiative.

Elizabeth Buse, Group President, APCEMEA, Visa Inc. said, "This initiative is a critical milestone for India as it solves the customer

identification problem when it comes to opening bank accounts. The biometric solution is unique and we are delighted to be playing a central role in the programme. The combination of Visa working with five of our leading clients, plus the UIDAI, shows what can be achieved when powerful partnerships are created."

Saral Money is not restricted to a specific bank or region. The service is aimed at all 210 million Aadhaar card holders currently enrolled and this will eventually expand to 600 million people, the UIDAI's target for 2015.

Once an individual receives an Aadhaar, he or she is automatically eligible for Saral Money and then need only

provide their Aadhaar registration letter at a bank to be issued with a bank-branded Visa account immediately, simplifying the account application process.

Prior to this, potential customers would have had to provide numerous documents to verify their identity, which automatically excluded hundreds of millions of people. Having opened their account, they can use Saral Money to make purchases, send money, or receive government payments electronically, with all the usual convenience and security benefits afforded to other Visa accountholders around the world.

Phase 1 of the Saral Money programme will see the account rolled out in New Delhi and the National Capital Region, with expansion to the rest of the country targeted for completion by the end of next year.

Toshiba, Hanrim partnership

Toshiba Corporation announced that the company is collaborating with Hanrim Postec LLC (Hanrim) in the development of wireless power system ICs. The companies are working on ICs and systems based on the Qi standard low power spec for mobile devices, including smartphones and mobile phones, as proposed by the Wireless Power Consortium (WPC), having a total of 137 member companies. Qi standard is an inductive

transfer standard for low power applications, standardised from 0 to 5W.

Toshiba and Hanrim will enter the mobile market this month with a non-contact charge system. Toshiba has developed and manufactures the ICs for the system and Hanrim provides the module. Demand for smartphones is growing rapidly, and so is their usage, as more and more people rely on them as a platform for messaging and accessing the

internet. As a result, it is often necessary to charge smartphones twice a day, sometimes even more, requiring users to carry a charging cable. This is stimulating demand for a new, cable-free, non-contact charging system that offers greater convenience and ease of use. Toshiba has developed two products to the Qi standard, utilising Hanrim's non-contact charging systems. Samples shipments will start from December.

Delhi Metro to honour 200 top smart card users on its 10th anniversary

As part of its celebration for the completion of 10 years of operation, Delhi Metro Rail Corporation (DMRC) is planning to felicitate the top 200 users of its smart card in the past one year. DMRC has identified top 200 smart cards users, who travelled the maximum from November 2011-October 2012.

According to the DMRC, at present, nearly 1.5 million smart cards are in circulation. About 1.8 million commuters ride Metro trains daily in the city. While 55 percent of commuters use smart cards, the rest use tokens

The Delhi Metro has recently installed its first automatic add value machine at Central Secretariat Metro station, where commuters can recharge their cards. The machine is touch screen-based and the passenger can recharge the smart cards avoiding long queue before the windows," the statement said.

According to Delhi Metro, the add value machine has been installed only at one (Central Secretariat) Metro station on a trial basis. Such machines will later be installed in other Metro stations, based on passenger response to them.

"It functions just like an ATM machine. If a commuter wants to top up the smart card, he needs to swipe the smart card and insert cash immediately; the card gets recharged. After recharge, the machine will generate receipt showing total balance in the card and physical ID number of the card. The receipt will help passengers if they face any dispute during the recharge process."

The statement said that only Rs.100 notes can be accepted by the machine. However, this can be changed to other denominations in coming months.

As of now, Delhi Metro tokens and smart cards can be purchased or recharged only by paying cash at the specified customer care centres at Metro stations.

Electronic toll collection system along NH2 from 2014

The Ministry of RoadTransport and Highways (MORTH) plans to introduce the electronic toll collection system along NH2, between Kolkata and Dhanbad, as a pilot project in 2014. The cars passing over the highway stretch will have RFID (radio frequency identification) tags, which will be fixed on their windscreens so that the electronic receiver can read the tag.

Each car will have unique tag and it will bear vehicle registration number and can not be removed from the windscreen. The owners will have to purchase the RFID tags from specific points and refill money from time to time as the electronic readers at toll gates will deduct money the number of times the vehicle crosses the electronic receiver.

Once the system is introduced, the cars without RFID tags will not be allowed on highways. This new technology will make travelling faster along highways and thus one can have non-stop ride.

Similar toll collection system will be introduced on Bengaluru-Chennai highway soon, according to sources. MoRTH plans to introduce the electronic mode on all national highways in the country. But it will take some time, as data on vehicles across the nation will be stored in one central server as vehicles may travel to any state.

Once the tags are pasted on the windscreen, it cannot be transferred to another car of the same owner. Depending upon the vehicle type, the tax will be deducted. Mismatch between the tag and the car can also be identified by the transreceiver at the toll.

According to official sourcesd, cars without RFID tags will not be allowed in lanes meant for cars with tags. So they are plans for a new law to stop the violators as there is no such offence provision under the existing laws.

G&D India inaugurates Chennai office

Giesecke & Devrient India, subsidiary of leading international technology group Giesecke & Devrient (G&D), announced the opening of another Indian location,which when fully staffed, will employ around 85 people. The Chennai branch will offer Indian banks and financial institutions a comprehensive range of services to help achieve the complex migration from cards equipped with magnetic stripes to highly secure modern smart cards.

The personalisation facility in Chennai began operating in August 2012, and has already received Visa and MasterCard certification. In addition to servicing the Indian market, the Chennai branch will make its extensive high-tech capabilities available also to neighbouring countries. Among the most important services G&D India is offering in Chennai are end-to-end EMV solutions, which are based on open standards and can be tailored to fit specific national rules as well as particular customer requirements. A successful transition toward using smart payment cards involves solutions in a number of areas, including key management, data management, personalisation, fulfilment, system integration, project management, and technical consulting.

STMicroelectronics targets Indian banking sector

STMicroelectronics, with global revenues of $ 9.73 billion, has targeted large information-security contracts in Indian banking and government space that are expected to generate millions of dollars in revenue. The company is now in talks with various banks for providing chip-based cards and is testing other technologies like near-field communications (NFC).

According to Bruno Batut, senior marketing manager, secure microcontrollers for Greater China and South Asia region, STMicroelectronics, in India, the company's major thrust areas would be in the unique identity programme and banking

industry. The banking industry has been moving toward replacing magnetic strip based cards and providing customers with chip-based cards. Widely believed to increase security, adoption of these cards in India is picking up.

"Globally, around 1.3 billion chip-based cards are issued annually while there are less than one million such cards in India," he said.

Already, banks like SBI, HDFC, ICICI and Axis among others offer chip-based cards or a combination of chip and magnet strip based cards.

Batut added that the technology was currently

in pilot phase and it was being brought in with local players.

For the unique identity project, Batut said that the project was currently in registration phase and will get active as applications emerge around the unique IDs issued to people.

STMicroelectronics is also looking at providing chips for enabling NFC in various forms like smartphones or in access control. NFC is a new way through which devices placed in close proximity can communicate with each other. Companies like Google, Mastercard and Visa have adopted NFC to help customers pay with their mobile phones.

While NFC has been adopted with some success in the US, Batut described its adoption in India as being in a "stage of infancy". While there are about 70-80 million points of sale terminals deployed worldwide, adoption would require consumers to buy devices that are NFC capable. In the Indian market, there are only a few high-end smartphones that provide this feature.

He added that though it was difficult to project growth of this technology, it would require a suitable infrastructure to be setup first — payment terminals, willing merchants and business applications included. "NFC will become generic in 5 years," he said.

Mobile phone and biometric technologies help monitor 3000 TB patients

Microsoft Research Labs (MSR) India is collaborating with Operation Asha, the largest non-governmental organisation in tuberculosis treatment and prevention, to provide the biometric fingerprint device to test and treat tuberculosis in India. Under the collaboration, training is provided to help health workers. To date, the biometric system has been deployed in more than 40 centres, with more than 60,000 medication doses administered to 3,000 patients.

The biometric fingerprint device, a low-cost laptop or netbook computer and

a GSM modem enables information transmission in areas without reliable internet connections are installed at various health clinics. The patient's finger print impression is registered through the biometric device and every time a dose is administered and the data is uploaded via a SMS (short message service) over the mobile phone, it is then recorded at a central location.

The records help the health workers to track the patient's dosage accurately and ensuring adherence to the full course of treatment. Over 50,000 drug doses have been administered

so far, to 3000 TB patients across 35 clinics in the country.

With the three devices working together, patients who come to the clinic can scan a finger, with an electronic record of their visit logged onto the netbook using software built on the Microsoft .NET platform. Throughout the day, the record of patients visiting each clinic is sent to Operation ASHA's central office using the GSM modem, allowing workers to track which patients came to each clinic using Microsoft SQL Server database software.

The biometric terminal is used daily in over 40

treatment centres, spanning Delhi, Mumbai, and Jaipur. Without a biometric system, health workers need to maintain handwritten records, checking of paper-based treatment cards when patients come to clinic to take the drug doses. From an administration standpoint, it was found difficult to handle patients at 225 centres, coming for treatment.

The World Health Organisation (WHO) has declared a global emergency to combat multi drug resistant tuberculosis which is reported to have affected over nine million of which two million are from India.

SMARTRAC announces new management board structure

SMARTRAC, the leading developer, manufacturer, and supplier of RFID and NFC transponders and inlays has recently restructured its management board. Christian Uhl, already a Director A of the Company has been appointed as (Co-Chairman of the Company. Nigel Sealey will be formally appointed to the position of Co-Chairman of the Company after his appointment as Director A by an extraordinary general meeting of shareholders to be held on January 22, 2013. Both will continue to perform their functions as CFO and COO respectively.

Christian Uhl joined SMARTRAC in May 2006 as Director Corporate Accounting, Controlling and Finance. Since April 1, 2008, he has been Member of the Group Executive Team and holds the management position of Group Chief Financial Officer (CFO). He holds a degree in business administration from the University of Bayreuth, Germany.

Nigel Sealey joined SMARTRAC in April 2012 as Group Chief Operations Officer (COO) and Member of the Group Executive Team coming from Oberthur Technologies where he held the position as Global Operations Director since 2004 joining Oberthur in 2000. Nigel Sealey graduated in Materials Science; Mechanical and Production Engineering from GLOSCAT (now Gloucestershire University), England.

In their role as Co-Chairmen of the Management Board, Christian Uhl and Nigel Sealey will work closely with both the Supervisory Board and the Group Executive Team of SMARTRAC to implement the 2013 strategic plan for the Company targeted at accelerating profitable revenue growth and enhancing the overall profitability of the company.

It is planned to appoint Richard Smith, Managing Director at One Equity Partners, as a member of the Supervisory Board at the extraordinary general meeting to be held on January 22, 2013. This supersedes the earlier announced plan to appoint Mr. Gregory O'Hara Chief Executive Officer of SMARTRAC. Mr. O'Hara will provide consultancy services to One Equity Partners and will advise SMARTRAC on the development of new business opportunities.

Bar code's co-inventor, Woodland dead

Norman Joseph Woodland, the co-inventor of the bar code that labels nearly every product in stores and has boosted productivity in nearly every sector of commerce worldwide, has died. He was 91. Woodland died on December 9 in Edgewater, New Jersey, from the effects of Alzheimer's disease and complications of his advanced age. Woodland was born Sept 6, 1921, in Atlantic City, New Jersey.

Norman Joseph Woodland.

Woodland and Bernard Silver were students at what is now called Drexel University in Philadelphia when Silver overheard a grocery-store executive asking an engineering school dean to channel students into research on how product information could be captured at checkout.

Woodland notably had worked on the Manhattan Project, the U.S. military's atomic bomb development team. And having already earned a mechanical engineering degree, Woodland dropped out of graduate school to work on the bar code idea.
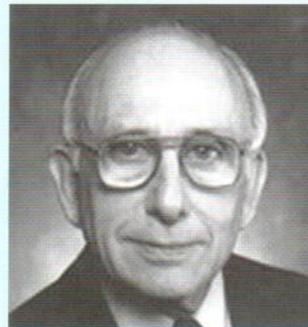
Woodland and Silver submitted their patent in 1949 for a code patterned on concentric circles that looked like a bull's eye. The patent was issued in 1952, 60 years ago. Silver died in 1963.

Woodland joined IBM in 1951 hoping to develop the bar code, but the technology was not accepted for more than two decades until lasers made it possible to read the code readily, IBM said. In the early 1970s, Woodland moved to Raleigh to join a team at IBM's Research Triangle Park, North Carolina, facility. The team developed a bar-code-reading laser scanner system in response to demand from grocers' desires to automate and speed checkout while also cutting handling and inventory management costs.

IBM promoted a rectangular barcode that led to a standard for universal product code technology. The first product sold using a UPC scan was a 67-cent package of Wrigley's chewing gum at a supermarket in Troy, Ohio, in June 1974, according to GS1 US, the American affiliate of the global standard-setting UPC body. Today, about 5 billion products are scanned and tracked worldwide every day.

Biometric market in APAC to grow @ 12.6% till 2016

According to the new analysis from Frost & Sullivan (http://www.autoid.frost.com) - An analysis of the Biometrics market in the Government Vertical in Asia-Pacific, the market earned revenues in the range of US$500 million in 2011 and is expected to grow at a CAGR of 12.6% till 2016.

"With many emerging economies in the region, there is a strong need for building infrastructure in terms of national identification and border security. Therefore, the Asia-Pacific biometrics market will witness faster growth than those in North America, the Middle East, and Europe," it says.

Rising crime rates and terrorism around the globe have forced governments to increase monitoring and introduce reliable border control systems. These security concerns and government regulations aimed at criminal identification and automated immigration at all entry points, whether air, land or sea, drive biometrics adoption in the government vertical across Asia-Pacific.

"National ID programmes have been implemented in many countries in the region to identify residents and track insurgents," said Frost & Sullivan Research Analyst Susan Sahayan . "However, due to the global financial crisis, tight government budgets and the high initial investments needed to implement full-fledged biometric systems, many projects have been delayed, postponed, or shelved."

To overcome these barriers, companies must facilitate the convergence of various biometric modalities into a single offering, as multiple authentication methods for identifying an individual will enable higher accuracy and greater security. They must be able to integrate biometrics with other electronic access control technologies such as video surveillance to meet the need for more intelligent and robust security systems.

"For companies looking to offer advanced technologies and secure large-scale government projects, good credentials are critical," noted Sahayan. "This raises entry barriers for potential market participants."

To stay ahead of their peers, participants are likely to resort to consolidation. Although this move will further intensify competition among the key players, it will also catalyse the development of innovative and superior products.

SMS celebrates its 21st birthday

SMS or Short Messaging Service, turned 20 years old on December 3. The first SMS was sent on December 3, 1992 by British engineer Neil Papworth, which read 'Merry Christmas'. Papworth, who was then 22 years old, worked with Sema Group Telecoms, and was part of the team developing a Short Message Service Centre for Vodafone, UK. He typed the message on a computer keyboard and sent it to an Orbitel 901 handset.

"Since mobile phones did not yet have keyboards, I typed the message out on a PC. It read, 'Merry Christmas,' and I sent it to Richard Jarvis of Vodafone, who was enjoying his office Christmas party at the time," Reading born Neil Papworth, who now lives in Montreal, Canada, says on his website.

Britons are the Champions of mobile text messaging, each person sends 200 messages every month on an average. According to Ofcom, more than 150 billion texts were sent in the UK last year. Texting is the preferred means of communication for Britons — it is not as intrusive as a phone call and quicker and more accessible than email.

"Initially the idea was to use SMS essentially as a paging service — no-one had any idea how gigantic the texting phenomenon would become," says Papworth, who 'helped develop and test the software, got it working on site, and had the honour of sending the first one to prove that it was working!"

"Back then I had no idea — I was just doing a day's testing. It was not until the 10th anniversary that I realised and thought, 'Wow, that was a big thing.' And here we are another 10 years later and text messaging has gone on to even bigger and better things now," Papworth said recently.

Now four billion people around the globe use SMS to communicate with each other. But, for the first time since their inception, text messaging volumes have declined. New figures from the media regulator Ofcom saw two quarterly declines — by over a billion — in the volume of SMS messages sent in the UK.

Smart Briefings

Sabeer Bhatia's Jaxtr to launch global SIM cards

Jaxtr, a telecom company backed by Hotmail co-founder Sabeer Bhatia, is planning to launch a common SIM card that can be used in many countries. In the first phase, the SIM cards will be launched in four countries — the UK, the US, Canada and Mexico. Bhatia plans to expand the services to about 30 countries by next year. Jaxtr is a social communications company that melds together global calling, SMS, and social networking. Jaxtr offers services such as international calling, short message service (SMS) along with social networking, including free SMS and free calling, across various countries.

IDBI Bank launches 'Kisan Credit Smart Card'

IDBI Bank in association with National Payment Corporation of India (NPCI) has launched the 'Kisan Credit Smart Card' (KCSC), a pioneering credit delivery innovation for providing adequate and timely credit to farmers under a single window with flexible and simplified procedures. Under this facility, farmers can avail assistance to meet their credit needs for agriculture and allied activities, such as, cultivation of crops, consumption requirements of farmer household, post harvest expenditures etc. KCSC would render the benefit of revolving cash credit facility to the farmers, allowing unlimited drawals and repayments within the credit limit. The credit limit would be fixed on the basis of operational land holding, cropping pattern and scale of finance etc. The card can be used to draw cash from any bank ATM and from a later date also for purchase of inputs like seed, fertiliser and pesticide from dealers using the POS machines.

UIDAI targets 400 million enrolments by mid 2013

The Unique Identification Authority of India (UIDAI) hopes to enroll 400 million people by mid 2013 as part of the government's ambitious Aadhaar programme that hopes to give a unique identity to some 1.2 billion residents of the country. "Our target is to get 600 million enrolled into the system by 2014. While we have capability to add a million people into the database per day, we are currently doing about 6 lakh," Nandan Nilekani, chairman of UIDAI said. The government's plan of direct cash transfer hinges crucially on the Aadhaar database. It is the first application that we are building on the database, Mr Nilekani said. Currently 270 million people are enrolled into the system, while unique ID numbers have been issued to 220 million. It is already the world's largest database based on biometrics like iris scan, finger printing technology," he added.

Nadra to help distribute Zakat in Sindh

Pakistan's National Database & Registration Authority (Nadra) announced that its NTL e-Sahulat outlets would be used in Interior Sindh and Karachi for disbursement of Zakat to beneficiaries of 'Guzara Allowance' registered by government of Sindh. In this connection, Zakat & Usher Department of Sindh has provided a complete list of Guzara Allowance beneficiaries with their eligibility criteria . Each beneficiary will receive Zakat through biometric verification, ensuring a fair method of disbursement to the deserving beneficiary. Each mstahiq's(beneficiy's) fingerprints are recorded and they are promptly issued a Benazir Muawanat card. As per Sindh Government guidelines, an amount of Rs 3000 is distributed to each Zakat mstahiq every 6 months.

Kerala aims 100% Aadhaar enrolment by March 31

Kerala state government is targeting 100 per cent Aadhaar enrolment by the end of this financial year and the primary objective was to deliver government services and grants through Aadhaar enabled systems. In the first phase, the integration and service delivery will be rolled out in Welfare Boards. Government is planning to utilise this service in the Rajiv Avas Yojana (RAY) schemes, PDS, NREGS, LPG subsidy, a press noted issued by State Industries and IT Minister P K Kunhalikutty said. Today the e-governance scene of Kerala has web based services, ICT based call centres, mobile governance and the technological advances are fuelling the Government citizen relations further. The long-term focus of the State is to create an integrated e-Government platform where in the services provided by various government departments and agencies will get integrated into a unified system.

Chandigarh among best performing UTs in UID enrolment

Chandigarh is one of the best performing union territories in the country in enrolment of unique identification (UID) cards with over 70 per cent of the population enrolled for the cards. According to officials, around 7.7 lakh people have been enrolled for the UID cards and efforts have been stepped up to take the figure to a 100 per cent. Officials said that the UT Administration has not only provided logistical support in the form of space at its e-sampark centres to the officials of the Unique Identification Authority of India (UIDAI) which has facilitated the enrolment, but in a government directive earlier it also specified that the UID cards will be treated both as an address and residence proof in delivery of services. UT Administration officials boast that the figures are an indicator of their better performance. They say that even before the Central government announced the cashless transfer facility, they used the UID platform to offer the services.The UID platform was earlier used by the Administration to allot the houses by the Chandigarh Housing Board (CHB).

Biometric system to track visitors at Central Prison

Coimbatore Central Prison authorities have decided to implement biometric system for the visitors at the prison in order to maintain a list and identity of the visitors. According to the authorities, three visitors can meet inmates once a week. The visitors can spend

30 minutes with the convicts in the interview hall of the prison complex. Many visitors used fake addresses and names to meet the prisoners more than once a week. Moreover, such visits led to transfer of contraband items into the prison. Therefore to prevent such activities at the Central Prison, authorities have decided to keep a strict vigil on the visitors. After implementing the system, the visitors would be required to show their identity proofs (voter identity cards, driving licences, Pan cards) to enter the prison complex. The photographs of the visitors will be taken using a web camera at the prison complex and their addresses, names will be stored in the computers. Fingerprints of the visitors will also be recorded. If any visitor comes to meet the prisoner more than once in a week using a different address or name, the system will alert the prison staff showing the details of the person's last visit. Currently, the system is in experimental stage at Palayamkottai Central Prison and will be implemented at Vellore, Coimbatore, Trichy Central Prisons in a phase-manner.

SBI to use POS terminals for utility bill payments

The State Bank of India (SBI) is evaluating the prospects of utilising the point of sale (POS) terminals installed at merchant establishments to accept remittances towards utility bills. According to the bank's Chief General Manager (Corporate Strategy and New Businesses) R. Karthikeyan, the proposed facility will particularly be of use to those not comfortable making payments online. Even while working towards a string of services on the terminals, the bank is also working on deploying its POS terminals at more commercial establishments. Karthikeyan said that right now there are 30,000 POS machines of SBI and the bank wants to take this to one lakh by March-end. The focus would be on taking the POS terminals across the country and into semi-urban and rural areas as well. Towards encouraging the use of its POS terminals, the bank had introduced incentives and loyalty programmes for the merchant establishments. Though at a nascent stage, the possibilities of using them for a range of services, including for remitting property tax and professional tax, were immense.

Automatic ticket vending at Bangalore metro stations

The Metro service will get smarter as Bangalore Metro Rail Corporation Limited (BMRCL) has launched automatic ticket vending machines (TVMs) at Namma Metro stations along Reach 1. The Corporation, in a press release stated "to start with, the TVMs will be operational at MG Road, Indiranagar and Baiyyappanahalli stations and the facility will be extended to other stations gradually." Passengers can now buy a single journey ticket (token) themselves by selecting the destination station or the amount in the TVM, avoiding the queue at the ticket counter. They can also add value or add trips to the tickets in the contactless smart card. The touchscreen facility at the TVM is available in three languages — Kannada, English and Hindi. Apart from this, passengers can buy eight tickets at a time and can get the receipt print for card recharge. Further, the machine accepts coins of Rs 5 and Rs 10 denominations and all types currency notes. It will display a message if there is no coin change available for dispensing.

GlobalPlatform announces new Board of directors

GlobalPlatform, the organisation which standardises the management of applications on secure chip technology, has announced its Board of Directors for fiscal year 2013, following annual elections for six of the eleven Board seats. Individual members to serve as Board Officers for a one-year term have also been confirmed, as well as the appointment of a new Mobile Task Force Chair and Strategic Director. Marc Kekicheff — Senior Business Leader of Chip Innovation at Visa Inc. retains his position as Chairman for the third consecutive year. GlobalPlatform Vice-Chairman, Uwe Wittig — Group Vice President, Head of Business Line Payment, Transit and Authentication at Giesecke & Devrient, and GlobalPlatform's Secretary / Treasurer, Yves Moulart — Director of Development and Innovation within STMicroelectronics' Secure MCUs Division, Secure Software Solutions have also been re-appointed to their respective roles at GlobalPlatform.

IDBI Bank launches Kisan Credit Smart Card

The IDBI bank has launched the Kisan Credit Smart Card (KCSC) in cooperation with National Payment Corporation of India (NPCI) to provide adequate and timely credit to farmers. The credit limit would be fixed on the basis of operational land holding, cropping pattern and scale of finance etc. Farmers can use this KCSC to meet their credit needs for agriculture and allied activities, such as, cultivation of crops, consumption requirements of farmer household and post harvest expenditures. A flexible limit of up to Rs 50,000 would be provided to the marginal farmers based on their land holding pattern and crops grown by them. All eligible farmers / SHGs would be provided with a Kisan Credit Card and a pass book. The card can be used to draw cash from any bank ATM and from a later date also for purchase of inputs such as seed, fertiliser and pesticide from dealers using the POS machines.

RSBY smart card has crossed 3.35 crore mark

The "Rashtriya Swasthya Bima Yojana" (RSBY) which was launched by the Union Ministry of Labour and Employment on October 1, 2007, and became operational from April 1, 2008, has so far issued more than 3.35 crore smart cards till the end of December,2012. RSBY aims to provide protection to BPL households from financial liabilities arising out of health shocks that involve hospitalization. The Scheme is presently being implemented in more than 25 States/Union Territories. Beneficiaries under RSBY are entitled to hospitalization coverage up to Rs.30,000 for most of the diseases that require hospitalization.

Smart Products

KEOLABS unveils CIPURSE certification solution for transportation applications

KEOLABS announced availability of services and solutions for in-house validation of smart cards, readers and phones implementing the Open Standard for Public Transportation (OSPT) standard for transportation fare collection. The KEOLABS CIPURSE certification includes validation solutions for customers' in house development and testing, debugging services and conformance certification. KEOLABS' CIPURSE certification solutions are available to customers in two editions: Express Edition — enabling test execution, results analysis and reporting; and Developer Edition ? enabling modification/creation of tests, test execution, result analysis, reporting. This complete offer allows KEOLABS to accompany customers through their full product development cycle from product conception to conformance certification. KEOLABS service offer includes both debugging and conformance testing for end user contactless devices, packaged devices, embedded integrated circuits & applets.

Suprema RealScan-G1 receives final STQC certification

Suprema, Inc., a global leader in biometrics and ID solutions, announced that the company's latest 'RealScan-G1 fingerprint live scanner tested in full compliance and received final certification from the Government of India's STQC (Standardisation Testing & Quality Certification) for the country's UID based fingerprint authentication demands. The STQC certification is an essential requirement for procurements of the UID project and ensures devices to satisfy API specifications presented by UIDAI. Suprema's RealScan-G1 is a compact-sized portable fingerprint live scanner which provides range-leading capture speed and clear image quality by using the company's advanced optical image processing technology. Along with its recently-added STQC certification, the device has been approved by several global standards including FBI PIV-IQS, FIPS 201 and Mobile ID FAP 30 certifications. In addition, RealScan-G1 features Suprema's unique 'hybrid type' live finger detection (LFD) technology which provides effective protection from fake fingerprints. On the hardware side, RealScan-G1 features IP54 certified rugged structure which provides extra durability under harsh conditions and it has USB2.0 interface for its power supply and data transfer. The device has wide platen (1.0 x 1.0 inch) for easier capturing. In addition, RealScan-G1 is compactly sized to fit into kiosks and mobile kits with 0.18 kg of weight.
Email andyahn@supremainc.com

CrossMatch unveils mobile essentials SDK for smartphone platforms

Cross Match Technologies, Inc., a leading global provider of biometric identity management solutions, announced the release of two new versions of its Mobile Essentials SDK that integrates its Verifier Mw wireless handheld fingerprint scanner with Android and Blackberry cellular smartphones. Both versions enable capture and identification applications that operate over 3G networks. The Company's popular Verifier line of fingerprint scanners includes the Verifier Mw which is ideally suited for mobile Rapid ID implementations. Up to now Mobile Essentials has enabled the use of the Verifier Mw on Windows platforms; making Rapid ID possible for patrol car laptops. The new versions of the SDK provide agencies utilizing cellular phone-based Rapid ID and field identification applications the ability to leverage the Verifier Mw's unique capabilities. Designed for single-handed use by an officer, the ruggedized Verifier Mw is the first FBI certified FAP 30 mobile fingerprint scanner on the market. And because the Verifier Mw is Bluetooth-enabled, it works with all current versions of Android and Blackberry smartphones, unlike sled-based scanners that are limited to a single phone model and often have less than ideal ergonomics. *visit www.crossmatch.com*

RFID Briefings

Honeywell to acquire Intermec

Technology giant Honeywell has announced plans to acquire RFID and automation-identification equipment technology company Intermec by June this year. Intermec, a 46-year-old firm based in Everett, Wash., manufactures RFID readers, printers, tags and labels, as well as bar-code scanners and mobile computers. With this purchase, Honeywell will acquire all outstanding common shares of Intermec for $10 per share in cash, totalling approximately $600 million. This acquisition not only will extend Honeywell Scanning and Mobility's (HSM) mobile computing line, but will also bring a host of RFID products to the company, which had launched only a single RFID-based offering to date, earlier this year. In June 2012, Honeywell made its debut in the radio frequency identification market, when it released a handheld reader intended for use within retail stores and warehouses. Once the acquisition is finalised, Honeywell intends to offer Intermec equipment as part of its HSM line, though the details of those plans have yet to be decided.

Pune IT college ties up with German institute

Pune-based Vishwakarma Institute of Information Technology (VIIT) has signed a memorandum of understanding with the ifm engineering, a subsidiary of German multinational ifm electronic gmbh, for setting up a centre of excellence at the VIIT campus. The upcoming centre of excellence will provide support to students at graduate, postgraduate and PhD levels in development of ifm electronic technology skils.The ifm group of companies have a global recognition in the domain of automation, offering solutions in technological research and making of sensors, controllers, RFID systems and condition monitoring systems that are used extensively by the manufacturing and allied industries. The centre will extend practical training, research and development to students as well as faculty members from various disciplines. Research and development based on 2D and 3D image sensors, image processing algorithms in automation industry will be focussed on, along with the training of human resources with skills relevant to ifm technologies.

NXP and Murata partner to deliver dual interface RFID solution

NXP Semiconductors and Murata announced a new addition to the Murata MAGICSTRAP® RFID module family incorporating NXP's UCODE I²C technology. In addition to delivering state-of-the-art RF performance, the bridge mode of the UCODE I²C chip uniquely enables a wireless communication link between the application processor and the UHF reader, enabling bidirectional and unlimited data transfer. The module provides consumer electronics products and white goods with both a consistent ID and the ability to perform zero-power configuration at any point in the value chain. Based on passive UHF RFID standards, data can be read or written into the memory of the MAGICSTRAP+I²C using a standard UHF reader, even while the device or appliance is switched off. Practically, this means that an electronics product can be configured for different languages and markets when already packed in a carton box and ready for shipment. By removing the need to configure products during assembly and when powered on, OEMs can make significant savings in manufacturing and logistics costs by responding precisely to regional and model demand. A protected unique ID built into the UCODE I²C enables protection against counterfeit and grey markets. This can be combined with cryptographic algorithms to have a strong protection. The possibility to write to the MAGICSTRAP even without connected booster antenna makes it the perfect choice for such uses. Full traceability from begin till end of life of a product is thus given. As the MAGICSTRAP will be soldered to the PCB, it will stay in the electronics product over its full life cycle. Therefore, it is also the perfect means to provide relevant data at recycling stage, deliver a proof of compliance to the WEEE directive and reduce according costs.

Identive gets US patent for tag on metal RFID technology

Identive has announced that it has been awarded patent 8,269,688 by the United States Patent and Trademark Office for an application of its "tag on metal" (tom) technology, which utilises specialised magnetic shielding to allow RFID tags to be used on metal devices or equipment, which normally interfere with RFID signal performance. Identive's tom technology allows RFID tags to be used to add mobile payment or NFC functionality to smartphones that are already in the market today. This latest patent builds on other patented and patent-pending inventions within Indentive's RFID tag on metal product family. Identive is a provider of solutions and services for the identification, security and RFID industries.

Airbus sets to tag seats and vests from 2013

Airbus has plans to roll out RFID tags for seats and life vests on all-in-production aircraft models in 2013, according Flightglobal. The manufacturer has installed RFID tags in a wide range of components and subassemblies — including avionics, communication, electrical and cabin interior equipment — on the in-development type. Now, with the introduction of tagging seats and life vests, the parts themselves will store details such as maintenance history and part-life expiry dates that can be automatically checked by handheld reader devices The RFID system should speed up maintenance processes, simplify inventory management and avoid potentially erroneous data entry associated with the manual checking of items, says Airbus.

RFID Products

ST allows technical equipment to 'talk back'

STMicroelectronics unveiled its latest chip, the LRiS64k, designed to speed up servicing and to simplify record keeping for OEMs and equipment operators in sectors such as health care, aviation, logistics, oil and chemicals, construction and manufacturing. The LRiS64K combines RFID circuitry with a 64-Kbit non-volatile EEPROM capable of storing data, such as initial manufacturer details and complete records of repairs or upgrades. Engineers servicing equipment such as medical devices, industrial equipment, automotive controllers or avionics modules containing an LRiS64K can access important unit-specific information held directly on the device, by using a standard RFID reader. LRiS64K is a long-range device, based on the international ISO 15693 and ISO 18000-3 mode 1 standards for RFID devices and capable of co-existing with other devices within range.The memory can retain data for more than 40 years and withstand more than one million write/erase cycles. With its on-board storage, there is no longer any need to retrieve paper records or access an online database. The unit's service history can be updated directly in the LRiS64K memory for access during subsequent inspection or servicing. This can save downtime and help reduce MRO   (Maintenance, Repair & Operations) costs.
http://www.st.com

### Smartrac introduces WebLite tag for retail EPC programmes

Smartrac has announced the introduction of its new ultra-high frequency (UHF) EPC compliant WebLite with Impinj Monza 5 IC, a well suited solution for item-level retail, logistics, and supply chain applications. With an antenna size of only 46 x 15 mm (1.8? x 0.6?) and a 128-bit EPC, 48-bit serialised TID, the Smartrac WebLite enables item-level tagging and identification where RFID tag space is limited and performance is important. The Smartrac WebLite meets the needs of retail apparel applications, featuring its compact form and special design. The WebLite also meets the technology needs of the industry by performing on a wide range of products from denim to kitchen electrics — while still maintaining a small form factor.
Contacts: Email: tanja.moehler@smartrac-group.com www.smartrac-group.com
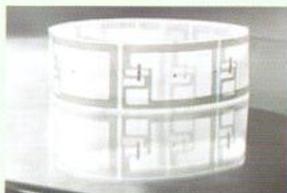
Avery Dennison expands its Monza 5 tag family

Avery Dennison RFID has released three new ultra-high-frequency (UHF) RFID tags made with Impinj Monza 5 chips. According to the company, this completes a portfolio of five UHF EPC Gen 2 passive RFID tags designed to be faster to encode than previous UHF tags, more sensitive for reading and writing, and available in offer a variety of form factors. Avery Dennison has been working with Impinj for years to develop inlays containing chips that meet users' changing needs. The latest tags round out a line of tags intended to present greater versatility to a variety of market sectors, ranging from logistics to jewelry, in smaller sizes and greater sensitivity, using Impinj's year-old Monza 5 chip.The latest additions are the AD-550m5 tag (for aviation and general-purpose supply chain applications), the 233m5 model (for item-level apparel tagging) and the 171m5 inlay (for tagging smaller items in the retail and health-care sectors). The three new tags were preceded by two other Avery Dennison inlays made with the Monza 5 chip: the AD-110m5 tag, released in December 2011 and designed for health-care applications, and the 227m5 general-purpose supply chain compliance tag, unveiled in September of this year.
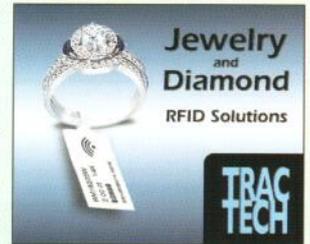
Motorola updates its 9000 series handheld reader

Motorola Solutions has released an updated version of its industrial handheld RFID reader, known as the MC9190-Z. The new device's predecessor, the MC9090-Z model, will be discontinued, with the remaining supply to be sold through the first half of 2013. According to the company, the MC9190-Z device promises improved RFID read performance, due to a faster processor, as well as greater memory, thereby increasing the rate at which data received from each read is processed. The MC9190-Z reader contains 256 megabytes or 1 gigabyte of memory, a faster processor and an updated Microsoft operating system—Windows Mobile (WM) version 6.5.3, as opposed to WM6.1. It also features a larger color display and three keyboard options, as well as an extended-range laser for barcode scanning. The new reader is designed for tough environments, Motorola reports, and has been beta-tested by customers in oil and gas, warehousing and retail environments, in the shipping and receiving areas, as well as by some factory operators.

EXHIBITION & CONFERENCE

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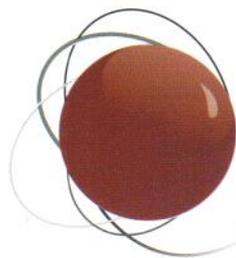
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Technological advances and challenges in telecommunications sector

Remarkable progress in telecommunications technology has had, and will continue to have, an enormous impact on telecommunications manufacturing and service industries. In particular, digital technology that integrates transmission, switching, processing, and retrieval of information provides opportunities to merge various service modes into an integrated whole. This digitalisation, merging the communications and computation functions, has been made possible by dramatic advances in device and material technology, including integrated circuits and optical fibres. As the role of digital processing increases, systems and services become more intelligent and labour-saving on the one hand, and more software-intensive on the other.

Satellites and optical fibres, among other technologies, contribute significantly to the globalisation of telecommunications services. Standardisation and interoperability of systems have become global issues, as have compatibility of regulatory measures that ensure free trade in telecommunication products and services.

Because telecommunications are now indispensable to socio-economic activities, reliability and security of telecommunications services have emerged as central issues. In our information age, information retrieval is gaining importance, while concerns are surfacing about the integrity and authenticity of the information to be provided, as well as the protection of privacy. These diverse issues are important to the future of telecommunications industries.

Convergence of service modes

Rapid innovation in information technology has made a variety of
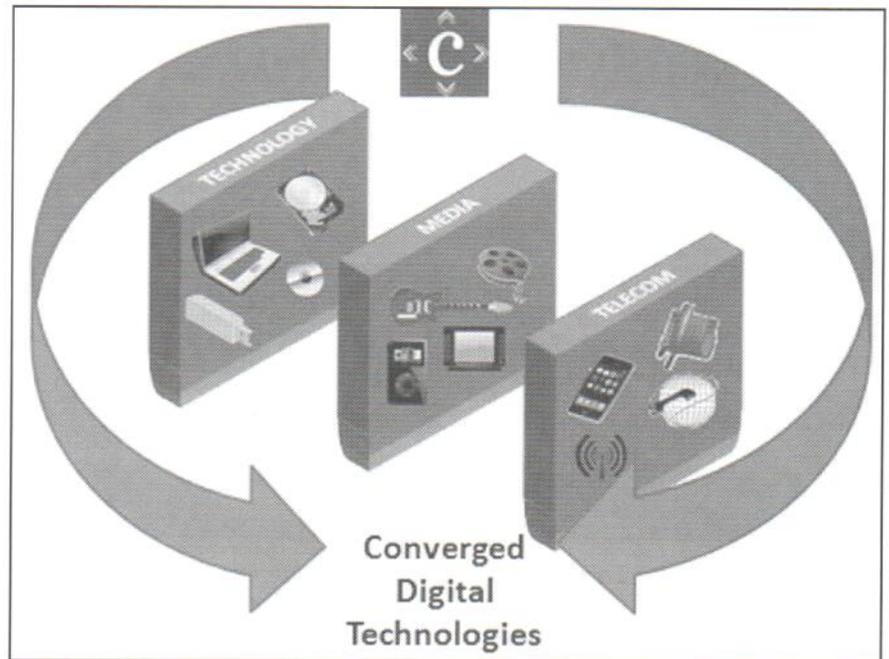
Figure 1: Convergence in digital technologies

traditionally separate information services increasingly related. This trend is often referred to as the convergence of service modes; the result is a drastic change for telecommunications products and services.

For example, telecommunication has already merged with information processing to provide data communication or on-line processing. Facsimile communication service provided by common carriers and electronic mail service provided by the post office will soon merge, eliminating the physical delivery of documents to and from customers. The difference between videotex by telecommunications services and teletext by broadcasting services will be minimised when cable television systems acquire two-way capability.

One benefit of the convergence of service modes is that it provides economies of scale; that is, many kinds of information can be provided in various forms through a variety of media at a reasonable cost. These benefits, however, will be lost without a re-evaluation of regulatory measures, which traditionally have been organised on the basis of separate services. Because services cover broad areas that transcend national boundaries, international compatibility of these regulatory measures is necessary to ensure the unobstructed flow of information globally.

Microelectronics revolution

The invention of transistors and the subsequent progress of solid-state circuit technology revolutionised information technology, bringing such innovations as digital transmission, digital switching, and digital computers. The advent of optical fibres, lasers, photodiodes, and other photonic devices permitted light wave communication over great distances. Clearly, major systems in modern telecommunication have been deeply dependent on innovations in the area of electronic de-

vices and materials. This trend often referred to as the microelectronics revolution, will intensify in the years ahead. New systems will depend more on the development of new devices and materials.
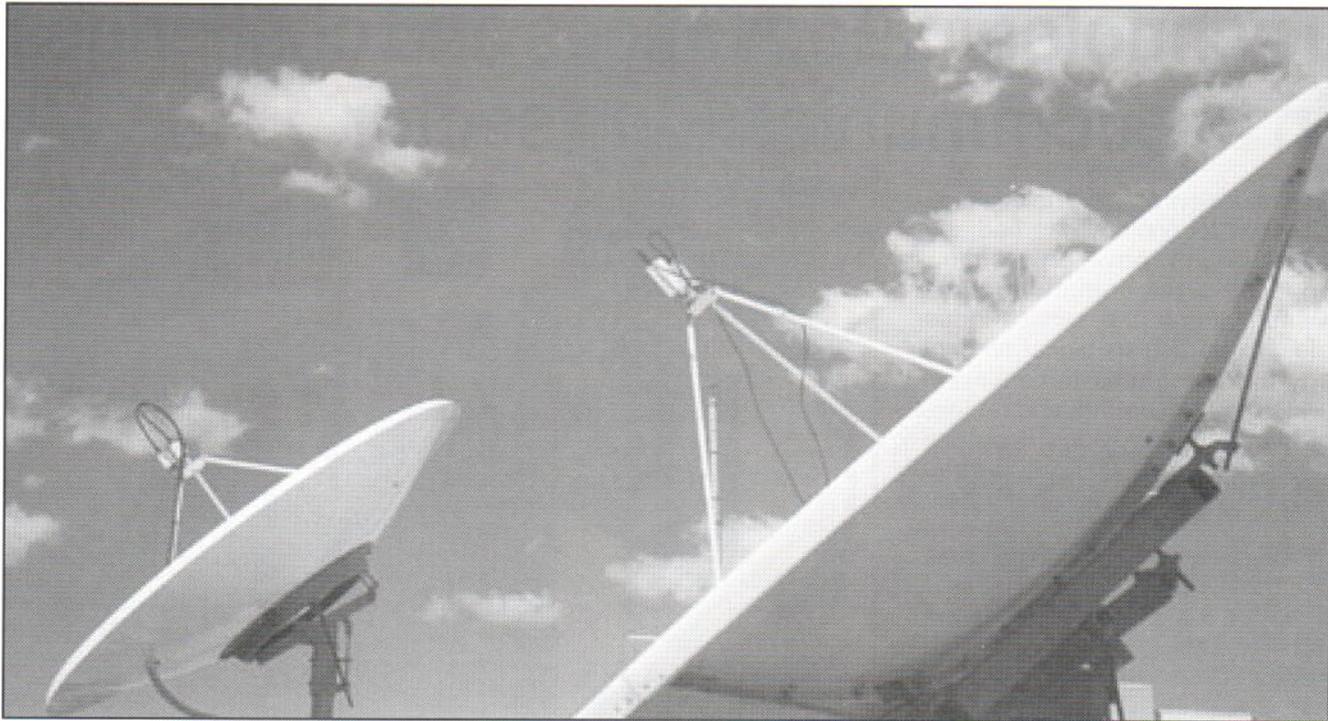
Characteristically, the technology supporting electronic devices and materials is capital intensive and quickly obsolete. Year after year, billions of dollars have been spent worldwide for research, development, and production of sophisticated devices, which, through keen competition in the marketplace, became cheaper and cheaper and eventually obsolete. Because of the rapid progress of large-scale integration that permits a sizable system to be mounted on a single chip, system manufacturers must also face the issue of capital-intensive investment and quick obsolescence.

Software crisis

As telecommunication technology becomes increasingly digital and computer-oriented, one major problem is the rising cost of software development and production. Although advances in device technol-

ogy are lowering hard-ware costs, software costs are soaring. The increase is due to the constant demand for more sophisticated and diversified types of software, as well as to the high labour costs associated with software development and production.

Several techniques, including structured programming, yield considerable improvement in software productivity. Yet much progress is needed before we will achieve dramatic improvements in software development, production, and testing. Because microprocessors are being used in an increasing variety of applications, tremendous efforts will be required to produce the many programmes needed for specific applications.

Another problem associated with software is patent and copyright protection. Generally, patent protection has been given to hardware-oriented inventions. However, since algorithms are considered similar to mathematical formulas or laws of nature, it has been ruled that software-oriented inventions are not patentable. Some countries have amended their copyright law to al-

low specific programmes to be copyrighted. However, in general, copyright protection cannot prevent infringement, as shown by numerous cases in which copyrighted articles are pirated.

Structural changes in industry

Whenever industry has changed in structure, workers in traditional industrial sectors have become obsolete and lost their jobs, and newly emerging industrial sectors have suffered from a shortage of workers. The present structural change brought about largely by information technology is no exception. Skilled workers, such as those who assemble telecommunication equipment, are losing their jobs to large-scale integration and the increasing use of industrial robots. Fewer telephone and telegraph operators and maintenance crews in switching centres are needed because of automation and digitalisation. Jobs of general office workers are also threatened by the rapid penetration of word processors and other office automation equipment.

On the other hand, many job opportunities are being created in the area of software production. Extensive education and training will facilitate a smooth shift of the labour force from decaying to emerging areas. Such preparation is crucial in dealing with the enormous and unprecedented change now under way in the industrial structure.

Production of telecommunications software should be shared through an international division of labour. Because the needs of users differ from country to country, programmes for specific applications have to be produced locally. Developing countries, where wages are relatively low and job opportunities for educated people are insufficient, may have an advantage over some developed countries, where wages are high and people are not motivated to adapt to structural changes in industry. In fact, quite a few newly industrialised countries have been active and successful in the area of software production. Thus, information technology, through its impact on industrial structure, may provide the impetus for a country's movement from developing to developed nation status. By the same token, developed countries that do not recognise and act on these trends will be unable to compete in this area.

Standardisation

As telecommunication services become global in scale, issues of standardisation and of maintaining interoperability between systems and equipment have become extremely important. Standardisation, however, is difficult to achieve for several reasons. First, the pace of innovation in telecommunication technology is very fast. Standards set too early may jeopardise future innovation, and if set too late, they are never used.

Second, because of networking, telecommunications require exten-
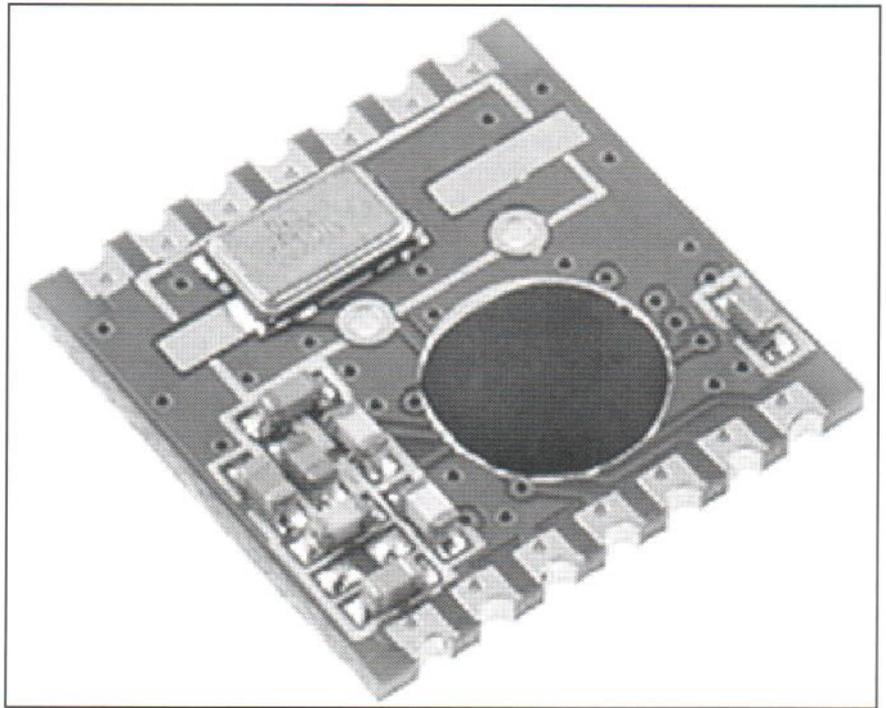
Figure 2: Microelectronics module

sive standardisation in software and hardware. A large amount of software at each switching centre has to be standardised to attain economies of scale, ease of maintenance, and interoffice signalling. To enable communication between terminals and computers, sophisticated software standards known as communication protocols have to be developed and implemented. As equipment becomes more sophisticated, more software has to be standardized.

Third, because new products are designed by competing industries, their specifications tend to be diverse. This makes it particularly difficult to establish a single standard in such areas as computers, terminals, and video packages, where powerful market forces and emerging technologies make existing products and specifications obsolete.

Fourth, conflicts of interest may occur between countries or groups of countries in trying to establish a single standard, because such a standard would benefit some countries more than others. Hence,

questions of fairness and political considerations must be addressed along with the technical issues.

Standardisation in telecommunication technology requires a great deal of collaboration and compromise between governments, common carriers, and manufacturers. It also requires a thorough understanding of the state-of-the-art, as well as insight into the future activities of all participants, not only governments, common carriers, and manufacturers, but also academicians and user representatives.

If it is impossible to establish a single standard, compatibility or interoperability between standards should be maintained to make interconnection possible. The open system interconnection (OSI) is typical of efforts to ensure interoperability between computers and terminals of different makes and models.

One encouraging note is that, despite two world wars and other international conflicts, worldwide standardisation activities have continued and even accelerated in re-

cent years. Standardisation is an important area of international activity in which countries, industries, and individuals of diverse backgrounds and interests can think and act constructively and cooperatively for the good of humanity.

Reliability and security

Telecommunication systems are subject to a variety of external and internal disturbances. External disturbances include physical factors such as electrical noise, powerline failure, and natural disasters as well as human factors, such as operators' mistakes, vandalism, and unauthorised access by outsiders. Internal disturbances range from chance and wear-out failures of components to hardware and software design errors not detected by testing.

Extensive studies of physical phenomena contributing to component failure have led to better component structure and fabrication techniques. Progress in large-scale integrated circuit technology under strict quality control has drastically reduced electronic device failure. Progress in redundancy techniques now makes it possible for a system to continue operating even when some of its subsystems fail. Automatic diagnosis and plug-in repair techniques have reduced the repair time for complex systems remarkably.

As hardware becomes more and more reliable, attention has been focused on software reliability. In most cases, software failure is caused by some imperfection that was not detected at the testing or debugging stage. These imperfections range from simple coding errors to complex mistakes or misconceptions in software design. Although various techniques have been developed to avoid errors in design and coding, making testing and debugging easier and more nearly complete, software is still

less reliable than hardware because it is produced predominantly by humans, who make mistakes more often than machines do.

Security has also been addressed through various techniques that provide secure telecommunication services. Although switching centres and computers are protected by various means from unauthorised access, fire, and some natural disasters, telecommunication systems are still vulnerable to theft. For instance, a microwave link can be intercepted by a highly sensitive receiver from a distance of a few kilometers with a low probability of detection, and a satellite link can be intercepted anywhere. A magnetic disc pack or magnetic tape can be stolen or copied easily. For enhancing security, encryption is an indispensable tool. Various encryption techniques have emerged ranging from such practical methods as the Data Encryption Standard to highly sophisticated public key systems. Although some of the cryptographic systems would require an enormous amount of computing time to crack, they may not confer perfect protection, given the speed with which supercomputers are changing. Enhancement of liability coverage and backup safeguards is necessary to complement these technological measures.

Integrity of information and protection of privacy

Information comes to us from diverse sources, even when it is supplied through a single telecommunication network. It has become extremely difficult for users, who are increasingly dependent on information, to know the original source of the information. Therefore, information providers should expend a great deal of care in gathering and handling data to maintain the integrity and authenticity of the information and make certain that users can determine the source.

This goal can be achieved in a number of ways. Full documentation of sources and methods is essential. Only authorised persons should be allowed to enter important data into data bases, to change data, or to process data for use by others, and there must be a record of these people and their activities. An audit trail must be provided through which one can trace entries into, and changes in, data bases and all steps in processing.

When information concerns individuals' or organisations' backgrounds and knowledge of activities, integrity of information implies confidentiality. If the information gathered is private, proprietary, or confidential, its disclosure might damage a person's reputation or be financially injurious to an organisation. Such information should be gathered only for the most compelling reasons, kept only as long as necessary, and guarded diligently against illicit use.

These technological advances represent only a few of the recent developments that have had a tremendous impact on telecommunication industries. In light of increasing dependence on information, our society needs an enormous stock of information, as well as appropriate means for selective access. In other words, the use of a variety of data bases and the development of data base management technology will significantly influence the growth of telecommunication industries. Because the ultimate objective of telecommunication is the promotion of mutual understanding and the enrichment of culture worldwide, technology that reduces language barriers, promotes computer literacy, and enhances computer-oriented music and arts will expand the horizons of telecommunication industries. All of these and other opportunities should be taken into account in assessing future changes in telecommunication industries.

GSMA calls for more women in mobile communications industry

The GSMA recently held its first GSMA Connected Women conference in Europe, bringing together more than 250 telecommunications industry professionals to discuss the challenges and opportunities facing women in technology today. Through a range of keynote presentations and panel discussions, the GSMA Connected Women: Enriching the Mobile Ecosystem event explored how to attract, nurture and promote more female talent within the mobile industry, a sector that has revolutionised the lives of billions of people around the world.

"Women today comprise 40 per cent of the global workforce and account for more than half of university graduates, and yet we see only three to five per cent of senior management positions in technology being held by women," said Anne Bouverot, Director General, GSMA. "This is a critical challenge that we must address immediately — as an industry, we will be at a disadvantage if we cannot attract and retain the most talented individuals, many of whom are women."

According to a Grant Thornton International business report issued earlier this year, women hold only 21 per cent of senior management positions globally across all industries and over the last 10 years, this number has remained largely unchanged. Most studies put the number of women in senior management posi-

tions in technology companies even lower, at around three per cent to five per cent.

In the 2012 Fortune 500 rankings, the number of female CEOs was 18, up from 12 in 2011, but women still accounted for only 4% of the ranking.

"One of our keynote speakers highlighted that of 1.4 million new computing jobs in the United States in 2018, more than half could go unfilled because candidates will not possess the sufficient education and qualifications," continued Bouverot. "We must do more to prepare women for careers in information and communications technology, and this starts with encouraging young girls and college age women to pursue technical programmes of study. This will be the

foundation of our industry's future."

The GSMA represents the interests of mobile operators worldwide. Spanning more than 220 countries, the GSMA unites nearly 800 of the world's mobile operators with more than 230 companies in the broader mobile ecosystem, including handset makers, software companies, equipment providers and Internet companies, as well as organisations in industry sectors such as financial services, healthcare, media, transport and utilities.

New global telecoms treaty

After two intensive weeks of negotiations, delegates from around the world have agreed a new global treaty that will help pave the way to a hyper-connected world that will bring the power of information and communication technologies (ICTs) to people everywhere. Over 2,000 delegates were registered

for the conference, which was held by ITU at the request of its 193 Member States to renegotiate the International Telecommunication Regulations (ITRs), the binding global treaty facilitating global interconnection and interoperability of information and communication services, their efficient operation and their widespread public availability. The treaty sets out general principles for ensuring the free flow of information around the world. New provisions in the text place special emphasis on future efforts to assist developing countries, on promoting accessibility to persons with disabilities, and on asserting all people's right to freedom of expression over ICT networks.

For more information, please visit the GSMA corporate website at www.gsma.com or Mobile World Live, the online portal for the mobile communications industry, at www.mobileworldlive.com.

By 2017 one in seven mobile subscribers will be VoIP user

Leading Hi-Tech analyst house Juniper Research forecasts that there will be over 1 billion users of over the top (OTT) mobile VoIP services by 2017, reflecting a dramatic shift in how voice traffic is carried over the next five years. Juniper's new report found that improvements in network technol-

ogy, increased competition and the move by telcos to join the OTT space will all come together to give the mobile "internet-voice" market a 'second wind'. However, as with Skype on the desktop, only a very small proportion will pay for the service, finds the report. "Many subscriber sign up to an OTT

service without ever planning to pay a cent for it, and some industry players do not have a short-term revenue model at all," notes the report author, Anthony Cox.

Key Findings

The report notes, however, that leading mobile VoIP players are becoming in-

creasingly sophisticated in their service offerings and are developing more ways to monetise their services.

Further key findings from the Report, Mobile & Tablet Voice & Video Calling: Strategic Opportunities & Business Models 2012-2017, include:

-Specialist mobile VoIP companies are opening their Application Programming Interfaces to third parties including MNOs to gain revenues.

-The arrival of 4G will give further impetus to mobile VoIP take-up but potentially accelerate the decline in overall voice revenues.

-Despite market challenges, mobile video calling market leaders are finally beginning to monetise the mobile video calling sector through advertising and premium services.

-Circuit switched voice revenues will still continue to decline, but at the end of the forecast period will represent a substantial proportion of MNOs' revenues

The report includes a comprehensive analysis of the current situation in the mVoIP and mobile and tablet video calling markets and contains five year forecasts for mVoIP and mobile video calling users and revenues. It also contains mVoIP tablets forecasts as well as RCS and Circuit-Switched Forecasts.

The "mVoices of Reason" whitepaper and further details of the study: 'Mobile & Tablet Voice & Video Calling – Strategic Opportunities & Business Models 2012-2017' can be downloaded from *www.juniperresearch.com*.

Researchers from India and Australia use mobile tech to tackle diseases and malnutrition

Researchers from the University of Sydney in Australia, working with Indian partners, are using mobile phone technology to tackle disease and malnutrition in remote parts of India. Data from the World Bank indicates that 63 out of every 1,000 Indian children die before reaching the age of five, with undernourishment taking a heavy toll.

"We often forget how easily babies die," says Anne Marie Thow, a health policy specialist from the University of Sydney. Together with Michael Dibley from the Sydney School of Public Health, she is piloting a project through the South Asian Infant Feeding Network to tackle child hunger in India.

Building on the pioneering efforts of Professor Archana Patel from the Lata Medical Research Foundation and the Indira Gandhi Medical College, the scheme encourages better infant feeding practices by using mobile phones to provide information and counselling to rural families. A midwife checks up on new and expectant mothers by ringing them each week, and as the infant grows women are sent customised text messages each day.

Work is being conducted in the eastern part of Maharashtra State around Nagpur. In villages where a single mobile phone is typically shared by a family, the researchers hope that information about correct feeding practices will be disseminated through the whole family.

Another Sydney academic is using mobile phones to help women in India reduce the threat of cervical cancer. Cervical cancer is one of the most preventable forms of cancer, but limited medical services in rural regions and the social stigma attached to cancer — which prevents women seeking help — contribute to high mortality rates. Of the 34,000 Indian women who died from cervical cancer in 2010, most were in their late thirties and early forties and most were in rural areas.

With support from the Australian government, Associate Professor Lyndal Trevena from Sydney's School of Public Health, is helping to train health workers to conduct a simple but effective low-tech screening and treatment programme that is widely promoted by the World Health Organisation (WHO) for use in low-resource settings.

She has collaborated with the Christian Medical College in Vellore, Weill Cornell Medical College in the USA and Cancer Council Australia to implement a screening programme which paints the cervix with vinegar and freezes any abnormalities with liquid nitrogen. This simple technique reduces the lifetime risk of cervical cancer by 25 to 40 per cent

In August, the programme brought together thirty experts from across India, including the method's pioneer Dr Sankaranarayanan from WHO, to share experiences and identify solutions.

The Strategic Partnership signed by India and Australia in 2009 has strengthened the bond between two countries that are increasingly drawn together by trade, security concerns and the legacy of history.

In Delhi, University researchers are conducting workshops with Indian partners and discussing future collaborations, and the University will be signing agreements with JNU, the All-India Institute of Medical Sciences and the Indian Council of Agricultural Research.

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F&S report on emerging LED lighting market in India

An "energy" revolution akin to the Green and White revolutions that occurred few years ago altering the agriculture and dairy sectors, is the need of the hour in India. And, light emitting diode (LED) lighting will be at the heart of such a revolution. Mandatory norms of energy efficiency for new buildings/facilities, incentive support for energy-efficient projects, integrated lighting management systems (ILMS) for street lighting, and phasing out of energy-guzzling lighting products could trigger an energy-efficiency revolution in India.

The LED lighting market in India is at a nascent stage and these lighting systems are yet to make inroads into the market, which is currently dominated by compact fluorescent lamps (CFLs) and T5 fluorescent lamps (T-FL). Poor penetration is due to high upfront cost of LED lighting systems, absence of standards, testing, measurement and verification protocols, and low level of awareness.

LED lighting systems are anticipated to play significant role in reducing India's overall energy requirements. Energy consumption can be reduced by usage of LED lighting for street lighting, in conjunction with ILMS. Implementing energy saving performance contracts (ESPC) for residential and commercial segments and integrating LED lighting controls and systems with building management systems will further lower energy costs of a building. Some LED lighting suppliers are bundling ESPC services along with their lighting products and energy-saving solutions, to diversify their revenue stream.

Current policies on energy efficiency might become redundant considering the construction sector's growth rate in India. The construction market is booming again and has been forecast to increase from USD 100 billion in 2010 to USD 154 billion by 2015, and USD 500 billion by 2025. Investments in green buildings are projected to increase to USD 30 billion by 2015.

Currently, seven mega cities are proposed to be built along the 1,500-km long Delhi-Mumbai Industrial Corridor (DMIC) with the help of Japanese government and Japanese corporations such as Matsushita, Hitachi, and Mitsubishi. A total of 24 mega cities have been planned — along the line of states like Uttar Pradesh, Haryana, Rajasthan, Madhya Pradesh, Gujarat, and Maharashtra - with the seven proposed cities to be completed by 2018-19 in the first phase. The whole DMIC project cost is estimated at USD 90 billion.

Prices of LED lighting systems have fallen by more than 30 percent in the past 2-3 years due to increasing adoption and manufacturing technology improvements. Mass commercialisation and acceptance will lead to a further fall in prices, which will make these products more affordable for commercial segments as well as low and middle-income households in the residential segment. With 20 percent of electricity consumption in a building attributed to lighting systems, there is indeed a great potential for LED lighting to gain prominence in India.

One of the major schemes that the Bureau of Energy Efficiency (BEE) is implementing during the 11th Five Year Plan (FYP) (2007-12) includes — Bachat Lamp Yojana, an ongoing programme to promote energy-efficient and high-quality CFLs as replacement for incandescent bulbs. Going forward, in the 12th and 13th FYPs, the Government must make efforts to replace these CFLs with LEDs.

Energy Conservation Building Code (ECBC), which sets minimum energy performance standards for new commercial buildings, has stipulated energy use of 110 kWh/m2/year as against the national benchmark of 180 kWh/m2/year. BEE is also targeting to reduce energy consumption by municipal street lighting systems, which currently adopt energy-guzzling lamps.

The Indian market is highly driven by the principle of 'value for money'. Offerings in future will be aimed at providing better quality and durable LEDs at low prices. The LED market in India was completely import-dependent in the past. However, few companies in India are now entering into joint ventures with foreign companies. Cheap imports from China, Taiwan, and Korea by distributors and dealers have been found to be of poor quality that has hurt the confidence of genuine users.

Absence of regulations and standards form a conducive market environment for such unorganised sectors to thrive. Today, India being a growing market for LEDs, many overseas companies are setting up manufacturing plants to cater to the growing needs of commercial, municipal (street lighting), and residential customers.

Cities of the future will most certainly witness dramatic changes in urban planning. It is thus imperative to incorporate smart concepts and greater information technology (IT) usage to monitor usage, reduce leaks/slippages, and aid in efficient delivery mechanism through effective demand management. This means that going forward, lighting companies would have to work in sync with software companies, and energy service companies (ESCOs), building management solution providers, and public agencies/urban local bodies, to bring various "smart" concepts to fruition.

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Corporate Briefings

M2M market to reach 400 million units by 2017

A new study from Juniper Research has found that the Telematics and Consumer Electronics sectors are rapidly becoming the two anchor industries for the M2M (Machine to Machine) market, challenging the position of smart metering. The report forecasts that the market for M2M and embedded devices will reach 400 million by the end of 2017, up from a little over 110 million at present. Juniper explained that while the eReader has single-handedly enhanced the prospects of embedded devices in the consumer electronics industry, the promise of increased driver efficiency and cost management will drive the success in telematics: "The automotive market is potentially easier to address than other sectors as it contains fewer players," adds Anthony Cox, Associate Analyst at Juniper Research and the report's author. Further findings from the M2M & Embedded Strategies report include: i. Almost without exception, Mobile Network Operators have embraced M2M as an industry sector, tailoring services and approaches to the industry; ii. APIs from M2M specialists are becoming increasingly sophisticated with tailored solutions for individual M2M customers now common; iii.Hardware manufacturers are providing increased support for their products including API and industry — specific modules; iv. 4G chipsets, while shipping in very low volumes at present, will find their market in the automotive industry and specific applications such as live video monitoring. The report also finds that the price of M2M modules will continue to reduce, particularly for 3G modules, as automotive and consumer electronics use-cases require improved bandwidth and latency, and as 2G infrastructure is retired in some markets.

ST named a Thomson Reuters 2012 Top 100 Global Innovator

STMicroelectronics, a global semiconductor leader serving customers across the spectrum of electronics applications, was named a Thomson Reuters 2012 Top 100 Global Innovator recently, recognising its achievements as one of the world's most innovative companies. The programme, an initiative of the IP Solutions business of Thomson Reuters, honours corporations and institutions around the world that are at the heart of innovation as measured by a series of proprietary patent-related metrics. The Thomson Reuters 2012 Top 100 Global Innovator methodology is based on four principle criteria: overall patent volume, patent grant success rate, global reach of the portfolio and patent influence as evidenced by citations. The Thomson Reuters 2012 Top 100 Global Innovator peer-reviewed methodology was executed using the Thomson Reuters Derwent World Patents Index® (DWPI), Derwent Patents Citations Index™, Quadrilateral Patent Index™, and Thomson Innova-

tion®, the IP and intelligence collaboration platform. Comparative financial analysis was done using the Thomson Reuters Advanced Analytics Deal-Making platform.

Air India flies high with Ramco Aviation

Ramco Systems, the Global Aviation Maintenance & Engineering (M&E) and Maintenance, Repair & Overhaul (MRO) software provider on cloud, tablets and iPad, announced that Ramco Aviation has gone live with its implementation in Air India. With this, Ramco Aviation Suite will help Air India in maintaining its 125+ fleet of Boeing and Airbus, including the latest Boeing 787 / Dreamliner. Ramco provides end-to-end solution that caters to every segment of Aviation, Aerospace and Defence industry such as Airlines , MROs, Heli-operators, CAMOs, Specialty Operators, Non-Scheduled Operators and OEMs on the most appropriate delivery model-On Premise or On Cloud. Written ground up for Aviation industry, Ramco Aviation Suite also offers complete ERP functionality including HR, Finance, and Materials thereby addressing every business need of the Aviation segment. Ramco Systems provides next generation, end-to-end enterprise solutions on Cloud, Mobile and Tablets. Built on Ramco VirtualWorks®, all Ramco products are cloud architected by design and address the entire business cycle from transaction to analytics. Part of the USD 1 billion Ramco Group, the company offers ERP, HCM, SRP, SCM, CRM, Financials, Asset Management, Process Control, Project Management and Analytics to 40+ verticals. http://www.ramcoblog.com/

Capgemini sets up mobile testing centre

Capgemini Group one of the world's foremost providers of consulting, technology and outsourcing services, announced that the company is reinforcing its global expertise in mobile solutions with the launch of a Mobile Testing Centre of Excellence (CoE) in Mumbai. The Centre of Excellence, led by global mobile solutions and testing experts from Capgemini and Sogeti will be equipped with the latest mobile testing specific tools and infrastructure both developed in-house and by industry leading partners. The CoE will deliver services such as Mobile Performance Testing, Mobile Functional Testing, Mobile Compatibility Testing, Mobile Usability Testing, and Mobile Security Testing. The CoE will act as a hub for Mobile Testing services across the globe with other Mobile Testing Centres of Excellence such as Sogeti High Tech in Grenoble, France and will work closely with experts in other countries including the United States, Sweden, Germany and the Netherlands, ensuring a strong Rightshore® approach. Capgemini and Sogeti launched a Global Service Line for Mobile Solutions earlier in 2012. The company is currently engaged in

projects for some of the largest brands in the world and holds strategic alliances with technology leaders including IBM, Microsoft, Apple, Google and SAP. www.in.capgemini.com

Hi-Tech Solutions unveils eTouch Pen

Bangalore-based Jeswill Hi-Tech Solutions Pvt. Ltd., a leading manufacturer of innovative productivity tools, recently announced the worldwide launch of their latest offering — the eTouch Pen. This plug and play gadget converts any laptop or desktop monitor running on the Windows 8 operating system into a touch screen. The scratch free pen enables comprehensive experience of every feature with just a touch, tap, drag or slide. Users can write on screen, draw or annotate, edit photo and use it for gaming. The compact, cordless eTouch Pen which carries FCC and CE certifications, uses ultrasound and IR technologies and does not require drivers for installation. The 17.4 gm gadget currently supports monitors upto 17 inches. Hi-Tech Solutions will launch compatible products for larger screens, AIOs and for Windows 7, shortly. eTouchPen has three components — a receiver with magnetic strip, a pen, and the USB Cable. Consumer needs to simply insert two SR41/LR41 batteries in the pen's compartment, attach metal strip to the monitor, slide the magnetic receiver unit on it, connect through USB and finally a onetime calibration with the screen! www.etouchpen.in

Renesas announces its share structure

Renesas Electronics Corporation, a premier supplier of advanced semiconductor solutions, at a meeting of the board of directors held recently, resolved to issue shares through Third-Party Allotment to The Innovation Network Corporation of Japan ("INCJ"), Toyota Motor Corporation, Nissan Motor Co., Ltd., Keihin Corporation, Denso Corporation, Canon Inc., Nikon Corporation, Panasonic Corporation and Yaskawa Electric Corporation, and (hereafter the "scheduled subscribers"). In implementing the Third-Party Allotment, one of the scheduled subscribers, INCJ, is required to file for regulatory approval in relation to business mergers with competition authorities in various countries, and the payment pertaining to the Allotment of Third Party Shares is subject to approval from all the applicable regulatory authorities. Furthermore, implementation of the Third-Party Allotment will result in changes to major shareholders, the largest shareholder who is a major shareholder, the parent company and other related companies, as outlined herein.

Naya Ventures launches new Rs.250 Cr Fund

Naya Ventures, a new type of venture capital fund specialising in early stage companies in the mobile and cloud markets, has announced its first closing for its 250 Crore Rupees ($50 million) fund. Headquartered in Dallas, with offices in Silicon Valley, Seattle and Hyderabad, India, Naya takes a unique approach from the typical venture capital fund to lead by collaboration. Combining the features of a venture capital fund with those of a private equity firm, Naya not only provides capital to early stage companies, but also the industry experience and relationships at the concept stage in their development to help jumpstart their growth to the next level and beyond. Naya helps connect entrepreneurs with the necessary key players in big companies, from internal product marketing and development all the way up to C-level executives, leveraging its own extensive operational experience, product development expertise and network of strategic relationships to help entrepreneurs grow their companies and accelerate value creation. At a time when many funds have struggled or even closed, the value of Naya's portfolio companies have created significant value and all its portfolio companies have gone straight to Series A or B funding. http://www.nayaventures.com

HCL Info to distribute Toshiba e-STUDIO

HCL Infosystems Ltd. will distribute the latest Toshiba copiers and scanners across the country. Taking forward its long standing partnership with Toshiba, HCL Infosystems will make available the latest Toshiba copiers — the e-STUDIO models 256, 456, e 2051c model and eSTUDIO18 through its extensive distribution channel, covering more than 500 company owned touch points. With the fast growing industrial demand, HCL Infosystems' channel strengths will play a formidable role for Toshiba in penetrating newer markets and segments within the country and reach a large customer base. The latest e-STUDIO models have been designed specially to serve the Office MFD segment and they are best suited for small to medium size work groups. In comparison to its competitors the new e-Studio Models provides the highest toner yields and highest copy resolution at 2400X600 dpi. The products are also environment friendly as they are ENERGY STAR qualified, Blue Angel and RoHS compliant. The unit also offers automatic duplexing which helps reduce paper waste. Also when the device is set to Super Sleep Mode, power consumption is reduced to 1 watt. For more details: E-mail: tanay.gogoi@hcl.com

Daily Objects.com launches accessories for iPad, iPod

With the Gadget market streaming with new launches every single day and the recent launch of iPad Mini, iPod Nano7, iPod Touch 5G, Samsung Note2, Or Nokia's Lumia Series, DailyObjects.com(India's First Online Accessory Store) after the successful first launch of Note2 accessories has been the first again

to launch the widest range of accessories for iPad Mini, iPod Nano7 and iPod Touch 5G in the market. DailyObjects has in its offering a variety of accessories ranging from Connecting cables to Screen Guards to Colorful Cases to Charging Devices to Designer Stands to radiation free Retro Handsets etc. Right Color for the Right Occasion — with a quirky colourful alternative to the status quo basic black and white cheap cases in the market, DailyObjects offers an array of happy colours and a varied range of cases suiting individual personalities, various moods and adventurous lifestyles.

Microsoft Innovation Centres to boost student tech expertise

Microsoft Corporation (India) Pvt. Ltd. announced the launch of 14 Microsoft Innovation Centres (MICs) in India, signing MoUs with leading academic institutions across four states. As part of the worldwide programme, that currently has 75 MICs, Microsoft aims to launch a total of 100 MICs in India in the next two years. These MICs will impact over 500,000 students, certifying 100,000 students on Microsoft technologies. The programme will also drive innovation and help build a product-based software economy by supporting product development, and over 500 start-ups. The MICs will act as innovation hubs at select colleges and technology institutes, providing incubation and expert hands-on support on Microsoft technology innovation, research, and software solutions, aiming to create a pool of student technology experts across India. Each MIC will function as a hub for five other neighbouring colleges and will operate in a hub-spoke model driving employability, innovation, and entrepreneurship in the academic ecosystem around it. The 14 cities that will host the first MICs, starting with the opening at Hyderabad.

Scoot airlines adopts cloud-based data link service

Scoot, the low cost subsidiary of Singapore Airlines, is the first airline in the world to adopt the agile and flexible data link management service powered by the Air Transport Industry (ATI) Cloud from IT provider SITA. The service manages the exchange of messages between the ground and cockpit, connecting airline users and applications to the aircraft. It is already in use at Scoot and will continue to be rolled out across the airline's expanding fleet. AIRCOM Server Online is one of the many services which SITA is now hosting in the Air Transport Industry (ATI) Cloud, a community cloud which was launched last year. It offers the same fully integrated message distribution and integration solution as the trusted AIRCOM Server without significant upfront investment

and with the added benefit for users of a smart and technologically advanced graphical user interface. SITA's AIRCOM Communications Services provide secure and reliable data link services for more than 50% of the global fleet of commercial jetliners. In addition, SITA's data link Communication Management Tools, including AIRCOM Server, are the de-facto industry standard in use by over 70 airlines worldwide. With SITA's extensive ground station coverage, Scoot and SITA's other customers enjoy least-cost routing for its messages through both VHF and Satellite communication channels.

HID Dell partner for healthcare solutions

HID Global, a worldwide leader in secure identity solutions, and Dell, announced that the two companies have combined their technologies to meet the growing needs of the healthcare industry. HID Global has provided OMNIKEY 5321 readers for use with Dell's Mobile Clinical Computing (MCC) solution, which offers greater security through a single authentication, fast and automatic, made with their own ID badge. The solution allows health care providers to have secure access to all authorised data and applications without the need to memorise different log-in IDs and passwords to hospital systems or external solutions. Besides the unique signature and authentication features, Dell's Mobile Clinical Computing solution consists of two pillars — cross-platform virtualisation and mobility equipment, providing healthcare organisations more efficiency, productivity and full data security. The purpose of Mobile Clinical Computing solution is to bring mobility to the hospital, save time, improve the quality of patient care, and increase hospital's operational productivity up to 25%.

Wipro wins the 2012 global MAKE award

Wipro Technologies, the Global Information Technology, Consulting and Outsourcing business of Wipro Limited, announced that it has been recognised as a winner of the Global MAKE (Most Admired Knowledge Enterprises) Award 2012. Established in 1998, the Global MAKE Awards are administered by Telecos, an independent research firm based in the United Kingdom. This is the fifth time that Wipro has been recognised as one of the top global organisations that transforms corporate knowledge into intellectual capital for the enterprise and increases stakeholder wealth by transforming new as well as existing enterprise knowledge into superior products, services or solutions. Wipro has also won the Asian MAKE Award-2012, thus winning the annual award ten times in a row. The panel that selected the Global MAKE award winners comprised of Global Fortune 500 senior executives as well as internationally recognised knowledge management and intellectual capital experts. visit www.wipro.com

Microsoft launches YouthSpark in India

Microsoft Corporation India Pvt Ltd has given the first indication of the impact its newly launched global initiative Microsoft YouthSpark, will have in India, announcing the award of cash grants worth 350,000 USD for Indian NGOs for the year 2012-13. Two local NGO's, Aide ét Action and Aga Khan Rural Support Programme, were allocated 250,000 USD for the year, in support of their work with youth. The company-wide initiative will aim to create opportunities for 300 million youth in more than 100 countries over the next three years. The announcement also included the launch of the first YouthSpark centre in Delhi, the first of 10 such centres across the country, that will work with underprivileged youth aged 16 to 24, offering training on basic IT skills, spoken English, personality development and job preparedness. Each centre will focus on one trade led enterprise — like IT-enabled services, retail, hospitality, automobiles etc. and from each batch of students, a select few will be trained in a simulated set-up, and encouraged to start their own group enterprises. This partnership with Aide ét Action, the first grant instalment for which was announced recently, will aim to train 80,000 youth over three years. Of these youth, 65,000 will be aided in finding employment, and 15,000 in starting their own enterprises.

Bramasol to expand partnership with SAP in India

Bramasol, Inc., a premier SAP solutions and services provider, announced that Caarma Infotech, a Bramasol company based in Pune, India, will be an official reseller of SAP products in India. SAP plans to enter an agreement with Bramasol for Caarma Infotech to sell SAP Business All-in-One and SAP Business One on HANA, focusing on key industries which include engineering and construction, high-tech and manufacturing for industrial machinery and components. The HANA solution is a high performance platform for emerging companies. Bramasol plans to expand business services throughout India adding to an experienced sales, implementation and support team to service the needs of the growing India market. http://www.bramasol.com

Plessey unveils hand-held ECG monitor

Plessey Semiconductors has unveiled its innovative handheld ECG monitor -The impulse. The user simply touches the two contact pads with both thumbs. The EPIC sensors detect the changes in the electric potential of the body and the raw data is then transmitted to a laptop or smartphone where the software turns this into a clear trace for display. Aimed at the home health and remote monitoring markets, the imPulse will allow the routine, quick and accurate recording of ECG signals outside of the medical environment and without the need for conductive gel, skin preparation. An example of a use for the imPulse is using it as part of a remote health monitoring system for the elderly or unwell. This would enable routine heart monitoring to be done without the need for a nurse to visit.

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e-health Access unveils the virtual medical kiosk launched

ehealth Access Pvt Ltd, a company focused on developing a healthcare eco system through Advanced Telemedicine Technology, announced the launch of first of its kind Virtual Medical Kiosk — a breakthrough technology innovation which enables patient-doctor consultation in a secure environment. Patients and doctors can communicate through phone, web cams, video conferencing, messaging, or chat. The Virtual Medical Kiosk is embedded with a touch screen system, audio-video capabilities, diagnostic equipment, scanner and medical management software capable to record personal health datato give a real-life experience through a proprietary platform developed by ehealth Access, that facilitates on-demand, real-time consultations with medical professionals any time of day. With the launch of this unique product, ehealth is looking at penetrating and serving a wider mass of population. The way health care is delivered is a lot dependent on the physical access and availability of the medical practitioner. It is based on face-to-face interaction between the doctors and the patient. But with this device the patients can consult a wide array of doctors at the touch of a button from wherever they are, whenever they want.Contact details: *lucy.dass@2020msl.com*

Robots Alive unveils robot powered by smart devices

Robots Alive, An emerging Robotics and Automation Solutions Company, has announced the launch of "Andy" - a personal smart robot enabled by the intelligence of a Smartphone or any smart device. Andy is a robotic device (or simply robot) which can drive around by being controlled by a mobile phone connected physically to the robot. The mobile phone communicates to the robot through the audio cable. Any software which can run on the mobile phone and utilize the audio therefore can be programmed to drive the robot. The reason of Andy's existence - the primary application of the robot is to educate youn students on robotics and electronics and also provide a source of entertainment for them. Andy also acts as an opportunity for Robotics Enthusiasts to own and explore their own personal robotics platform at a price that is attractive and with features that keep growing. Andy comes with two models - a Tank and an Off Roader. Visit: info@andyrobo.com

Searching for cheap material, researchers develop transparent solar panels

Currently, most of solar cells are made of silicon, which is an expensive materia because the silicon is generally highly purified and then made into crystals that are sliced thin. Many researchers around the world are exploring alternatives, such as nanostructured or hybrid solar cells; indium tin oxide (ITO) is used as a transparent electrode in these new solar cells.

Recently a team of researchers at Massachusetts Institute of Technology (MIT) have produced a new kind of photovoltaic cell based on sheets of flexible graphene coated with a layer of nanowires. The approach could lead to low-cost, transparent and flexible solar cells that could be deployed on windows, roofs or other surfaces.

Earlier in July last year, UCLA researchers had announced development of a new transparent solar cell that is an advance toward giving windows in homes and other buildings the ability to generate electricity while still allowing people to see outside.

The MIT team of researchers include Hyesung Park, Sehoon Chang, Silvija Gradecak, and eight other scientists.

According to Gradecak, currently, indium tin oxide (ITO) is the material of choice for transparent electrodes, such as in the touch screens now used on smartphones. But the indium used in that compound is expensive, while graphene is made from ubiquitous carbon.

The new material, Gradecak says, may be an alternative to ITO. In addition to its lower cost, it provides other advantages, including flexibility, low weight, mechanical strength and chemical robustness.

Building semiconducting nanostructures directly on a pristine graphene surface without impairing its electrical and structural properties has been challenging due to graphene's stable and inert structure, Gradecak explains. So her team used a series of polymer coatings to modify its properties, allowing them to bond a layer of zinc oxide nanowires to it, and then an overlay of a material that responds to light waves — either lead-sulfide quantum dots or a type of polymer called P3HT.
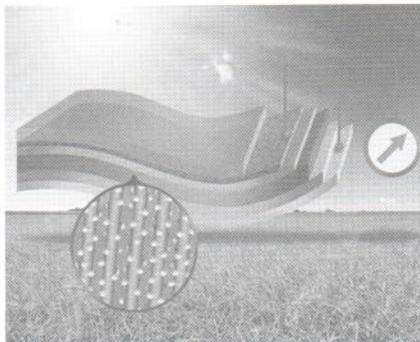
Despite these modifications graphene's innate properties remain intact, providing significant advantages in the resulting hybrid material.

"We have demonstrated that devices based on graphene have a comparable efficiency to ITO," she says — in the case of the quantum-dot overlay, an overall power conversion efficiency of 4.2 percent — less than the efficiency of general purpose silicon cells, but competitive for specialised applications. "We are the first to demonstrate graphene-nanowire solar cells without sacrificing device performance."

The manufacturing process is highly scalable, according to Park. The graphene is synthesised through a process called chemical vapour deposition and then coated with the polymer layers.

"The size is not a limiter, and graphene can be transferred onto various target substrates such as glass," Park says.

Gradecak cautions that while the scalability for solar cells has not been demonstrated yet — she and her colleagues have only made proof-of-concept devices a half-inch in size - she does not foresee any obstacles to making larger sizes.

"I believe within a couple of years we could see devices" based on this technology, she says.

Research at UCLA

The UCLA team described a new kind of polymer solar cell (PSC) that produces energy by absorbing mainly infrared light, not visible light, making the cells nearly 70% transparent to the human eye. They made the device from a photoactive plastic that converts infrared light into an electrical current.

"These results open the potential for visibly transparent polymer solar cells as add-on components of portable electronics, smart windows and building-integrated photovoltaics and in other applications," said study leader Yang, a UCLA professor of materials science and engineering, who also is director of the Nano Renewable Energy Centre at California NanoSystems Institute (CNSI).

Yang, who is also the holder of the Carol and Lawrence E. Tannas, Jr., Endowed Chair in Engineering, added that there has been intense world-wide interest in so-called polymer solar cells.

"Our new PSCs are made from plastic-like materials and are lightweight and flexible," he said. "More importantly, they can be produced in high volume at low cost."

Polymer solar cells have attracted great attention due to their advan-

tages over competing solar cell technologies. Scientists have also been intensely investigating PSCs for their potential in making unique advances for broader applications. Several such applications would be enabled by high-performance visibly transparent photovoltaic (PV) devices, including building-integrated photovoltaics and integrated PV chargers for portable electronics.

Previously, many attempts have been made toward demonstrating visibly transparent or semitransparent PSCs. However, these demonstrations often result in low visible light transparency and/or low device efficiency because suitable polymeric PV materials and efficient transparent conductors were not well deployed in device design and fabrication.

A team of UCLA researchers from the California NanoSystems Institute, the UCLA Henry Samueli School of Engineering and Applied Science and UCLA's Department of Chemistry and Biochemistry have demonstrated high-performance, solution-processed, visibly transparent polymer solar cells through the incorporation of near-infrared light-sensitive polymer and using silver nanowire composite films as the top transparent electrode.

The near-infrared photoactive polymer absorbs more near-infrared light but is less sensitive to visible light, balancing solar cell performance and transparency in the visible wavelength region.

Another breakthrough is the transparent conductor made of a mixture of silver nanowire and titanium dioxide nanoparticles, which was able to replace the opaque metal electrode used in the past. This composite electrode also allows the solar cells to be fabricated economically by solution processing. With this combination, 4% power-conversion efficiency for solution-processed and visibly transparent polymer solar cells has been achieved.

Tiny structure gives big boost to solar power

Princeton researchers, led by electrical engineer Stephen Chou, the Joseph C. Elgin Professor of Engineering, have found a simple and economical way to nearly triple the efficiency of organic solar cells, the cheap and flexible plastic devices that many scientists believe could be the future of solar power. The researchers were able to increase the efficiency of the solar cells 175 percent by using a nanostructured "sandwich" of metal and plastic that collects and traps light.

The research team used nanotechnology to overcome two primary challenges that cause solar cells to lose energy: light reflecting from the cell, and the inability to fully capture light that enters the cell.

With their new metallic sandwich, the researchers were able to address both problems. The sandwich — called a subwavelength plasmonic cavity — has an extraordinary ability to dampen reflection and trap light. The new technique allowed Chou's team to create a solar cell that only reflects about 4 percent of light and absorbs as much as 96 percent. It demonstrates 52 percent higher efficiency in converting light to electrical energy than a conventional solar cell.

That is for direct sunlight. The structure achieves even more efficiency for light that strikes the solar cell at large angles, which occurs on cloudy days or when the cell is not directly facing the sun. By capturing these angled rays, the new structure boosts efficiency by an additional 81 percent, leading to the 175 percent total increase.

Chou said the system is ready for commercial use although, as with any new product, there will be a transition period in moving from the lab to mass production. The physics behind the innovation is formidably complex. But the device structure, in concept, is fairly simple.

The top layer, known as the window layer, of the new solar cell uses an incredibly fine metal mesh: the metal is 30 nanometres thick, and each hole is 175 nanometres in diameter and 25 nanometres apart. (A nanometer is a billionth of a metre and about one hundred-thousandth the width of human hair). This mesh replaces the conventional window layer typically made of a material called indium-tin-oxide (ITO).

The mesh window layer is placed very close to the bottom layer of the sandwich, the same metal film used in conventional solar cells. In between, the two metal sheets is a thin strip of semiconducting material used in solar panels. It can be any type — silicon, plastic or gallium arsenide — although Chou's team used an 85-nanometre-thick plastic.

The solar cell's features -- the spacing of the mesh, the thickness of the sandwich, the diameter of the holes — are all smaller than the wavelength of the light being collected. This is critical because light behaves in very unusual ways in subwavelength structures. Chou's team discovered that using these subwavelength structures allowed them to create a trap in which light enters, with almost no reflection, and does not leave.

"It is like a black hole for light," Chou said. "It traps it."

The team calls the system a "plasmonic cavity with subwavelength hole array" or PlaCSH. Photos of the surface of the PlaCSH solar cells demonstrate this light-absorbing effect: under sunlight, a standard solar power cell looks tinted in colour due to light reflecting from its surface, but the PlaCSH looks deep black because of the extremely low light reflection.

PV+SOLAR Briefings

No violation of guidelines under Solar Mission, says Abdullah

The Minister of New and Renewable Energy, Farooq Abdullah, told Rajya Sabha on December 18 that there has been no violation of policy guidelines for implementation of schemes under Jawaharlal Nehru National Solar Mission and there is no loss to the Government whatsoever. He was replying to Supplementaries during which some members wanted to know his response on the alleged scam of Rs 13,000 crore by a private company Lanco Infratech. The Minister said a committee consisting of three Joint Secretaries was set up well before the media reports in this regard appeared, to look into the issue and no violation of guidelines was found. He said if any irregularity is proven and it warrants cancellation of award contracts to private firms, "such an action can be taken by the appropriate authority as Government of India does not award any contract directly". The Minister also said there have been significant achievements during the first phase (January 2010 - March 2013) of the JNNSM and several projects under various programmes have been completed. Grid connected projects of 1047.16 MW have already been commissioned. As much as 99 per cent of the total solar power generation in the country is by the private sector.

100-MW solar energy park to come up in TN

A 100-megawatt (MW) solar energy park is coming up in Ramanathapuram district, one of the economically backward districts of the Tamilnadu, at a cost of Rs. 920 crore. To be established over 500 acres in Paramakudi taluk, the park project will be promoted under the public-private partnership mode. A memorandum of understanding was recently signed by the Principal Secretary/Chairman-cum-Managing Director of the Tamil Nadu Industrial Development Corporation (TIDCO), Hans Raj Verma, and CMD of Raasi Green Earth Energy, C. Narasimhan. It has been planned to complete the project in 12 months. This would facilitate generation of employment, directly and indirectly, to a total of about 2,000 persons. This would be the first project to be implemented under the Solar Energy Policy 2012 of the State government. The policy envisaged implementation of solar power projects to the tune of 3,000 MW by 2015. The State government had earlier given a direction for the implementation of solar power park projects of 1,000 MW in five years through the TIDCO with the help of government and private organisations. The task of land acquisition had been left to the private promoter. However, the government would enable creation of infrastructure and power evacuation. A large number of investors would be invited to set up the power plants in the park. The project implementation would be done through a special purpose vehicle (SPV) to be floated by the TIDCO and the private promoter. The SPV would arrange funds for investors besides handling operation and maintenance of the power plants in the park.

Mahanadi Coalfields plans to set up polysilicon plant in Odisha

Mahanadi Coalfields Ltd (MCL), a subsidiary of state-run Coal India Ltd, plans to invest Rs 4,650 crore to set up a state-of-the-art polysilicon manufacturing plant as part of its diversification activities. The plant will be set up near its mines in western Odisha. Polysilicon is the raw material used to manufacture ingots which is then cut down to get wafers. Solar cells are prepared from these wafers and then the cells are assembled to get solar panels which are used in solar power plant to generate power. There are only 4 to 5 polysilicon manufacturers in the world. Odisha will be the first state in the country to have polysilicon manufacturing unit that will produce high grade export quality polysilicon which will address the need of the entire solar industry value chain. According to Mahanadi Coalfields Ltd's director (finance), Kulamani Biswal, the company has a cash reserve of more than Rs 13,000 crore and realises its responsibility to diversify into the most clean form of energy, solar. The plant would be set up in two phases, each phase consisting of 3,000 MT of polysilicon. The company is expecting a gross margin of around 36 to 40 per cent and Internal Rate of Return (IRR) of more than 42 per cent from the investment.

Solar energy research institute launched

Solar Energy Research Institute for India and the United States (SERIIUS), a collaboration between academia and industry of the two countries, was officially launched recently. The institute that includes IIT Bombay scientists will come up with an innovative, low-cost and effective solution to energy needs. The Indian government, through the department of science and technology, and the US department of energy have each committed $25 million over a period of five years, while a group of 30 companies from India and US will give another $25 million. The three research thrust areas of the centre will be sustainable photovoltaics, establishment of multi-scale concentrated solar power systems and solar energy integration. The lead institution of SERIIUS in India will be Indian Institute of Science (IISc), Bangalore, and National Renewable Energy Laboratory in the US. Industry and academic partners include General Electric, Hindustan Petroleum, Massachusetts Institute of Technology, Stanford University and IIT Madras. The centre will be a virtual platform for interaction and working jointly on projects. IIT Bombay is part of the research thrust leadership for the initiative. "Recent research shows India's needs can be met with renewable energy, of which solar can be a big part.

Further Chinese investment in domestic PV demonstration projects

China's central government has allocated another 7 billion yuan (1.11 U.S. dollars) to subsidise domestic solar photovoltaic (PV) demonstration projects, according to an announcement by the Ministry of Finance (MOF) recently. Together with the 6 billion yuan earmarked in the first half of 2012, China has allocated a total of 13 billion yuan to boost its domestic PV market this year. The funds will be pumped into new projects designed to generate 5.2 gigawatts of solar power, data from the MOF showed. A total of 149 demonstration projects initiated in this round are giant schemes with an installed capacity of no less than 10 megawatts each. They add up to a total capacity of 2,550 megawatts, or 92 percent of the overall scale for this round, the ministry said. The MOF is also encouraging investment in smaller, independent PV power stations by offering them higher subsidies per watt, data showed. The independent power stations receiving funds this time are designed mainly for islands or remote areas without electricity. The projects will benefit about 280,000 households with no access to power. All demonstration projects are expected to be completed by June 2013, followed by project inspection and assessment.

BHEL to invest Rs 2,000 crore for solar equipment making plant

Bharat Heavy Electrical Limited (BHEL) has announced its plans to invest up to Rs 2,000 crore for setting up solar equipment manufacturing facility having a capacity of 600 MW. According to B.P.Rao, CMD, BHEL, Initial investment could be around Rs 500-600 crore and can go up to Rs 2,000 crore. BHEl's move to foray into solar equipment manufacturing comes at a time when the import of cheap solar gears, especially from China, as well as overcapacity are hurting the Indian players. According to BHEL, solar equipment from some countries are coming into India at prices lower than their market value. Currently, there is no customs duty on imported solar power equipment. On the other hand, power sector woes — including fuel scarcity, financial constraints and environmental hurdles are adversely impacting the business prospects of BHEL.

Punjab government makes mandatory solar panels on all buildings

Punjab government has consented to the proposal to give subsidy on solar panels to make them popular among domestic consumers with an idea to make solar energy mandatory in the public and private buildings especially in the houses constructed over an area of one kanal and above plots in the urban estates. The State Government has come out with NRSE-2012 Policy which aims at maximising and improving the share of new and renewable sources of energy to 10% of the total installed power capacity of the state by the year 2020 besides promoting renewable energy initiatives for meeting energy needs. The policy also focus on creating conducive conditions to woo private sector investments in NRSE projects along with broader participation by public by giving a slew of incentives. As per the new policy focus would be laid to generate nearly 1000 MW power through non conventional and renewable sources of energy in the state by year 2022.

Tamil Nadu opens bids for 1GW of solar power

Tamil Nadu government has opened bid for 1 gigawatt (GW) of new solar capacity in 2013, as part of the state's goal of reaching 3 GW by 2015. The government plans to reach its goal from Renewable Energy Certificates (REC), rooftop installations, and utility style projects. Successful bids will have 10 months to put the new solar energy on-line, along with providing proof of purchase of the land to complete the projects.

Solar power powers five railway stations in MP

Bhopal Rail Division's five stations, designated as 'green', are fulfilling their entire electricity requirement through solar power. This is helping the division save a substantial amount of money which was earlier being paid as electricity charges. The division is saving Rs 40,000 each per month by turning these stations into 'Green Stations'. Their entire electricity requirement is being generated by tapping solar energy. A five KW solar power plant each had been established at these stations through which 800 AH (Ampere Hour) batteries were charged. These batteries, through an inverter, supply adequate power to the station to meet their requirement.To further save power, advance T-5 fittings, LED lamps and CFL lights were being used at these stations.

New norms for funding solar projects

The Ministry of New and Renewable Energy (MNRE) has proposed norms for viability gap funding (VGF) for large-sized solar power projects that would come up in Phase II of the National Solar Mission. VGF will be made available for certain specified capacity solar projects — say, 750 MW or 1,000 MW — according to the draft policy document on National Solar Mission, Phase II, released on December 3. The tariff at which such projects will sell solar power to electricity distribution companies will be "pre-fixed, at say, Rs 5-6 per unit", the document says. The tariff would be determined in accordance with the guidelines of the Central Electricity Regulatory Commission. In Phase II, which will run between 2012-13 and 2016-17, the MNRE expects to facilitate the creation of 10,000 MW of utility-scale solar power capacity.The document also intends to encourage domestic manufacture. A 'domestic content requirement' in terms of percentage of value, price preference for local made modules and "some batches with 100% domestic content requirement" are among the options thrown open for discus.

NI unveils six new C series modules

National Instruments has announced six new C Series modules designed for NI CompactRIO embedded control systems and NI CompactDAQ modular data acquisition systems. By expanding the C Series platform, NI provides engineers and scientists with new and improved options for a wide variety of embedded control, monitoring and data acquisition applications. Channel counts on the individual modules range from three to 32 channels to accommodate a wide range of system requirements, and the majority of C Series modules work in both the NI CompactDAQ and CompactRIO measurement platforms with no modification.

New C series module list includes: NI 9467 GPS synchronisation module - Accurately synchronize a large-scale CompactRIO system with features such as data timestamping and system clock setting; NI 9469 chassis synchronisation module — Create high-channel-count, distributed systems with custom timing and triggering by linking chassis with a standard Ethernet cable; NI 9381 multifunction I/O module — Fit more functionality into a single system with analogue input, analog output and digital I/O all in the same module;

NI 9229 and NI 9239 analog input modules with BNC connectivity — use the industry-standard BNC connection for applications such as video and RF; NI 9220 analogue input module with screw terminal or BNC connectivity — build high-channel-count systems in smaller chassis with 16 channels of simultaneous I/O. Additional Resources: NI CompactRIO Embedded Control and Monitoring System: www.ni.com/compactrio/NI Compact DAQ Modular Data Acquisition System: *www.ni.com/compactdaq/*

Fairchild high-voltage cost-effective MOSFETs
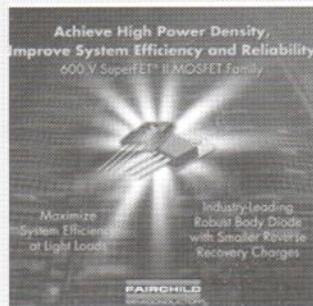
High-end, AC-DC switch-mode power supply (SMPS) applications such as servers, telecom, computing, and industrial power applications require high power density, and to be successful, designers need cost-effective solutions that take up less board space and improve reliability. Fairchild Semiconductor helps designers with these challenges by introducing the 600V N-channel SuperFET® II MOSFET series. Offered in two product families, the SuperFET II and SuperFET II Easy Drive, these MOSFETs offer a smaller stored energy in output capacitance (Eoss) for higher efficiency in light-load conditions and best-in-class robust body diode for increased system reliability in resonant converters.

Utilising an advanced charge balance technology, these MOSFETs provide a significantly low on-resistance and a lower gate charge (Qg) performance for a lower figure of merit (FOM). The devices are comprised of several integrated features to assist in a simplified design that reduces component count for a more efficient, cost-effective design including a gate resistor (Rg) that greatly reduces gate oscillation and improves overall system performance. Samples available upon request - Delivery 8-12 weeks ARO. *http:// www.fairchildsemi.com.* E-mail: *paul.hughes@fairchildsemi.com*

Zebronics introduces powerful tower speakers

Top Notch Infotronix, India's leading supplier of products and accessories for Computers, Consumer Electronics and Communications under the brand 'Zeberonics' unveiled their latest series of speaker systems — imposing sized Monster Tower speakers. Adding to one of the industry's widest range of speakers and sound accessories, the Zebronics Monster Tower lineup comprises three models delivering up to 100W RMS of sound in a unique 'tower-style' form-factor that dominates the room. The Zebronics Sound & Entertainment Showcase, the Company's showing of their comprehensive line-up of digital media players, audio speakers and entertainment systems. There are more than 40 products, the largest array of options in media players, 2.0 and 2.1 bookshelf style speakers, 5.1 high-quality audio systems, gaming sets and others — ranging in prices from as low as Rs. 99 to Rs 9999. *Contact:Email: rahul.sharma@zebronics.com, ravi_raman@melcole.com*

EEPROM-Configurable IC enables easier development of TPMS modules

The MLX91802 from Melexis Microelectronic Integrated Systems N.V.is a system in package solution for tyre pressure monitoring system (TPMS) implementations that combines an analog pressure sensor and a low power sensor interface with an MLX16 16-bitRISC-based microcontroller. It is housed in a compact, pressure ported, plastic SO16 package and has an operational temperature range of -40 °C to 125 °C. The MLX91802Uni-ROM concept makes available Melexis' ready-to-use firmware. This means that any TPMS incorporating this device can be fully developed without the need for custom software engineering. By using

simple configuration tools, operating behaviors can be set so that the MLX91802 can be deployed in a customised TPMS module without writing any code. It provides a complete firmware solution for TPMS based on 6 modes: Storage, parking, driving, pressure alert, fault and test.

The Uni-ROM allows setting of the main parameters, defining the features of the different modes and the transitions between them. Configuration and customer data are stored in the internal EEPROM memory of the MLX91802. As well as shortening design time, utilising Uni-ROM instead of a custom ROM permits ordering of low unit volumes.
www.melexis.com E-mail: m.green@pinnademarcom.com

IAR Systems development tools offering for smallest ARM cores

IAR Systems® has announced the availability of a new edition of the development tool suite IAR Embedded Workbench®, tailored for the small ARM® Cortex™-M0 and ARM Cortex-M0+ cores. The ARM Cortex-M0 edition of IAR Embedded Workbench targets developers working with MCUs based on these very small and energy-efficient cores, and is offered at a considerably reduced price from that of the full version which supports all ARM cores. Based on the full edition of the recently announced version 6.50 of IAR Embedded Workbench for ARM, support for this spe-

cial edition is limited to the development of MCUs based on ARM Cortex-M0, Cortex-M0+ and Cortex-M1 cores. During the last year, IAR Systems has added a comprehensive list of new features to its world-leading development tool suite, including a new source browser, an enhanced text editor, and stack usage analysis functionality. In addition, enhancements to the optimisation technology in the powerful IAR C/C++ Compiler™ result in outstanding code execution speed.
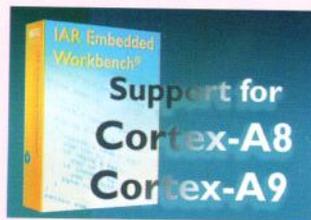
The ARM Cortex-M family is optimised for cost and power sensitive applications such as smart metering, human interface devices, automotive and industrial control systems, white goods, consumer products and medical instrumentation. The ARM Cortex-M0 and Cortex-M0+ processor families are developed to be physically small with low power consumption and minimal code size, with the ambition to supply developers with 32-bit performance at an 8-bit price point. Customers who opt for the ARM Cortex-M0 edition of IAR Embedded Workbench will have an easy migration upgrade path to a full edition with complete support for all ARM Cortex-M/R/A cores. http://www.iar.com/contact. E-mail: fredrik.medin@iar.com

AVX unveils a new ultra-miniature chip capacitor series

AVX Corporation, a leading manufacturer of advanced passive components and interconnect solutions, has introduced a new series of ultra-miniature chip capacitors for the RF and microwave communications market. Featuring copper electrodes in place of standard precious metal electrodes, the new CU Series chip capacitors provide extremely low ESR, high Q, and tight tolerances. Available in 01005 and 0201 case sizes, the new copper
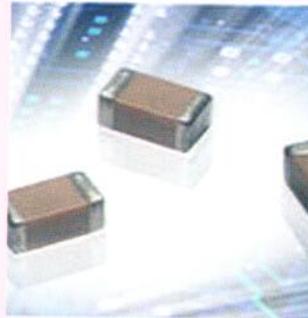
electrode chip capacitors are ideal for applications including power amplifiers, handheld devices, GPS, vehicle location systems, and matching networks for wireless LANs. AVX's new CU Series chip capacitors are composed of C0G (NP0) temperature-compensating EIA Class I ceramic materials, one of the most stable dielectrics available, and feature lead-free, nickel and tin-plated terminations. The temperature coefficient of capacitance for the series is 0±30ppm/°C from -55° to +125°C. Capacitance value and working voltage vary by case size. The 01005 CU Series capacitors have a capacitance value range of 0.5 - 6.2pF

and a working voltage of 16VDC, and the 0201 capacitors have a capacitance value of 0.5 - 22pF and a working voltage of 25VDC. *www.avx.com.*

Mouser stocks NXP LPC800 LPCXpresso board

Mouser Electronics, Inc. is stocking and shipping the NXP Semiconductors' LPC800 LPCXpresso Board, based on the new 32-bit LPC800 microcontroller family designed for the 8-bit microcontroller market.NXP LPCXpresso, the full-featured IDE-based software development tool, supports the complete product design cycle for the LPC800, easing the transition to 32-bit architectures. Based on an ultra-low-power 30-MHz ARM® Cortex™-M0+ processor, LPC800 MCUs are designed specifically for the 8-bit world and offer deterministic, real-time performance. Featuring easy-to-use, innovative peripherals such as a flexible switch matrix and a state configurable timer, the LPC800 introduces a new level of flexibility without adding complexity. To learn more about NXP LPC800 MCUs and the LPCXpresso Board, visit http://www.mouser.com/nxp-lpc800. With its broad product line and unsurpassed customer service,

Mouser caters to design engineers and buyers by delivering What is Next in advanced technologies. Mouser offers customers 19 global support locations and stocks the world's widest selection of the latest semiconductors and electronic components for the newest design projects.

C&K unveils new latching pushbutton NP series switch

C&K Components, a leading global manufacturer of tactile, toggle, rocker and pushbutton switches, and smart card interconnect devices, has developed a new single-pole single-throw, latching version of its NP Series industrial sealed pushbuttons. An innovative internal construction allows designers the feel of a momentary switch that has latching functionality. The compact size allows customers many integration opportunities where some switches could not fit before and the IP68 sealing makes it robust enough for all indoor and outdoor applications. The RoHS-compliant NP Series switches are available in multiple housing styles and can be threaded via front or rear mounts, or slot-mounted. The new compact NP Series switch has a short behind-panel

depth and is sealed to IP68 standards. The rugged latching version of the switch has a metal body and numerous wire lead options, making it ideal for harsh environments, such as off-road, industrial, transportation, military vehicle, and medical equipment applications. Contact: allison.turner@coactive-tech.com

FCI's AirMax VSR cable assembly features innovative shield-less design

FCI, a leading manufacturer of connectors and interconnect systems, has developed the AirMax VSR high-speed internal cable assembly that utilizes an innovative shieldless connector design to deliver excellent signal integrity (SI) performance and data rates of up to 10Gb/s. The advanced AirMax VSR high-speed internal cable assembly design features an optimized air dielectric between adjacent conductors to simplify the grounding structure while reducing cost and weight. The AirMax VS high-speed internal cable assemblies support the Infiniband QDR data rate and other industry standard parameters and are designed for data communications applications where efficient high-speed data transfer is required.

Right angle and vertical mating board headers with passive latch retention make the AirMax VS ideal for internal high density cabling for high-speed signaling, replacing typical
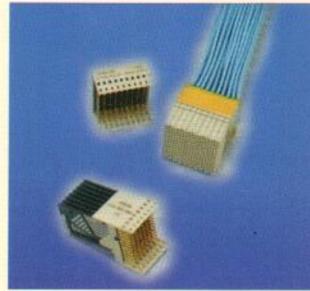
backplane systems with this all-in-one cable assembly solution. These 26 AWG internal cables are constructed using four differential pair per column base configurations in both 8- and 10-column counts. External cable assembly solutions can be configured using the same four-pair per column base configuration and integrating customer defined requirements related to cable retention and EMI system termination.

These external AirMax VS cable assemblies feature robust die-cast covers that include superior guiding and EMI shielding performance. The EMI terminates to both metal cable covers and hardware chassis. A plastic snake-skin outside jacket allows for tighter bend radius capability and easier cable routing than conventional jacketed cables.

FCI also offers a complete and comprehensive portfolio of performance validated industry standard based IO solutions that include board connectors, cages and cable assemblies whether passive copper cable assemblies, active optical cables or transceivers as well as modified custom cabling solutions. *www.fci.com/ airmaxvscableassembly*

VIA Labs announces two new USB 3.0 host controllers

VIA Labs, Inc., a leading supplier of USB 3.0 integrated chip controllers, two next generation USB 3.0 Host controllers, the four-port VIA VL805 and the two-port VIA VL806. The VIA VL805 and VIA VL806 allow a PCI Express-equipped platform to interface with multiple SuperSpeed USB peripherals devices simultaneously for blistering fast transfers rates up to 5Gbps while retaining full
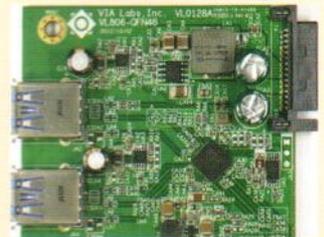
backwards compatibility with USB 2.0 and 1.1 devices. The next generation single chip VIA VL805 and VIA VL806 Host controllers include enhancements for improved performance, seamless cross compatibility and interoperability, and new features such as support for USB Battery Charging and "Charging Downstream Port" which enables both fast data sync and rapid charging with compatible devices. The VIA VL805 and VIA VL806 comply with the Universal Serial Bus 3.0 Specification for Super-Speed transfers and Intel's eXtensible Host Controller Interface (xHCI) 1.0 specification and add native inbox driver support for Windows 8. VIA VL805 and VL806 host controllers are USB-IF certified and are currently shipping. *Visit: www.via-labs.com*