KBytes
leading edge news
Volume 1 | Issue 6 | November 2014

Why India's Mars mission is so cheap - and thrilling

http://www.bbc.com/news/science-environment-29341850

India's space programme has succeeded at the first attempt where others have failed - by sending an operational mission to Mars.

The Mangalyaan satellite was confirmed to be in orbit. It is, without doubt, a considerable achievement.

This is a mission that has been budgeted at 4.5bn rupees ($74m), which, by Western standards, is staggeringly cheap.

The American Maven orbiter that arrived at the Red Planet is costing almost 10 times as much.

Back in June, Indian Prime Minister Narendra Modi even quipped that India's real-life Martian adventure was costing less than the make-believe Hollywood film Gravity.

Even Bollywood sci-fi movies like Ra.One cost a good chunk of what it has taken to get Mangalyaan to Mars.

India's Mars orbiter $74m

Cost of India's Mangalyaan mission $671m

Cost of Nasa's Maven Mars mission

• Launched on 5 Nov 2013

• Weighs 1,350kg

• Closest point to Mars 366km

MANJUNATH KIRAN/AFP

So how has India done it? For sure, people costs are less in this populous nation, and the scientists and engineers working on any space mission are always the largest part of the ticket price.

Home-grown components and technologies have also been prioritised over expensive foreign imports.

But, in addition, India has been careful to do things simply.

"They've kept it small. The payload weighs only about 15kg. Compare that with the complexity in the payload in Maven and that will explain a lot about the cost," says Britain's Prof Andrew Coates, who will be a principal investigator on Europe's Mars rover in 2018.

"Of course, that reduced complexity suggests it won't be as scientifically capable, but India has been smart in targeting some really important areas that will complement what others are doing."

Mangalyaan has gone equipped with an instrument that will try to measure methane in the atmosphere.

This is one of the hottest topics in Mars research right now, following previous, tantalising observations of the gas.

Earth's atmosphere contains billions of tonnes of methane, the vast majority of it coming from microbes, such as the organisms found in the digestive tracts of animals.

The speculation has been that some methane-producing bugs, or methanogens, could perhaps exist on Mars if they lived underground, away from the planet's harsh surface conditions.

It is a fascinating prospect.

So, even though Mangalyaan has a small payload, it will actually address some of the biggest questions at the Red Planet.

Western scientists are excited also to have the Indian probe on station.

Its measurements of other atmospheric components will dovetail very nicely with Maven and the observations being made by Europe's Mars Express. "It means we'll be getting three-point measurements, which is tremendous," says Prof Coates.

This will enable researchers to better understand how the planet lost the bulk of its atmosphere billions of years ago, and determine what sort of climate it could once have had, and whether or not it was conducive to life.

Contd. on page 2

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I have read a lot about the criticism of Mangalyaan and India's space programme.

There's an assumption among many, I guess, that space activity is somehow a plaything best left to wealthy industrial countries; that it can have no value to developing nations.

Students in Chennai saluted the country's space scientists.

The money would be better spent on healthcare and improved sanitation, so the argument goes.

But what this position often overlooks is that investment in science and technology builds capability and capacity, and develops the sort of people who benefit the economy and society more widely.

Space activity is also a wealth generator. Some of the stuff we do up there pays for stuff down here.

The industrialised nations know it; that's one of the reasons they invest so heavily in space activity.

Consider just the UK. It has dramatically increased its spending on space in recent years. The government has even identified satellites as being one of the "eight great technologies" that can help rebalance the UK economy and drive it forward.

India wants a part of this action, too, and in Mangalyaan and its other satellite and rocket programmes, the nation is putting itself into a strong position in international markets for space products and services.

Karnataka government to set up smart class rooms, virtual classes

http://timesofindia.indiatimes.com/home/education/news/Karnataka-government-to-set-up-smart-class-rooms-virtual-classes/articleshow/45241250.cms

BENGALURU: Karnataka government will soon set up smart class rooms and virtual classes at its first-grade colleges to achieve quality enrichment of teaching-learning processes through technological intervention, a minister said.

"A plan is afoot to establish smart class rooms in all the government first-grade colleges across the state," Higher Education Minister R V Deshpande told reporters here today.

As a pilot project, smart class rooms are being set up in select 50 government first-grade colleges. Smart classrooms will be set up in other government colleges in a phased manner, he said.

Pointing out that virtual classes were the second mode, Deshpande said e-content in the form of video lectures, eBooks, audio books and lecture notes, pertaining to the undergraduate course syllabus, extra-curricular programmes and personality development available online as OpenCourseWare are being downloaded.

He said the downloaded E-content will be distributed to all the government first-grade colleges and will be made available to students and staff to access through networked computers and mobile handsets via wireless LAN.

"This measure is intended to supplement the traditional course delivery system by enabling the students to access useful online OpenCourseWare content offline and bypass the bottleneck of text book production," Deshpande said. Wireless local area network that helps in accessing the stored e-content is being set up in a hundred government first-grade colleges across the state.

Kwiz

Q1 Which cyber legend founded the wireless technology company "Wheels of Zeus"?

1. Steve Wozniak
2. Steve Carell
3 Ben Stiller
4 Steve Jobs

Q2. Which of these is the smallest gadget in the iPod family?

1. Shuffle
2. Classic
3. Mega
4. Nano

Q3. Which company is best known for developing Winamp media player?

1. Apple
2 Cockos
3 Pixar
4 Nullsoft Inc

Q4. "Ideas worth spreading" is the tagline of which company?

1. Academy
2 So.cl
3 Caddiola
4 TED

Q5. Which mobile device manufacturer's tagline is "Quietly Brilliant"?

1 Motorola
2 Samsung
3 Swipe
4 HTC

Answers of October issue

Q 1. Filippo Brunelleschi, architect and engineer

Q 2. Google

Q 3. Logical Link Control

Q 4. Intel

Q 5. Uniform Resource Locator

Q 5. Adobe Reader

Combining tech and human interface for customer delight

http://www.thehindubusinessline.com/features/newmanager/combining-tech-and-human-interface-for-customer-delight/article6564281.ece

Banks, similar to all new-age companies, are catching up on all that's new in the tech field. But does this translate into sounding a death knell for traditional servicing methods such as the human touch?

Despite the irrefutable contribution of technology in improving service quality and customer experience, the adoption of advanced technologies such as Interactive Voice Response (IVR) by commercial banks in their customer care centres has left customers feeling aggrieved. Critics say a section of customers prefers physical interaction with bank executives to being serviced by an automated response system.

A direct interaction between customers and executives helps in not only forging a better relationship but also helps in customer satisfaction and consequently, enhanced customer loyalty. The five essential parameters of Service Quality, as per the SERVQUAL Model, are Reliability, Assurance, Tangibles, Empathy and Responsiveness. Taking a cue, most modern commercial banks are constantly coming up with innovative offerings to cater to their customers' needs – by creating a mix of traditional interaction and modern technology.

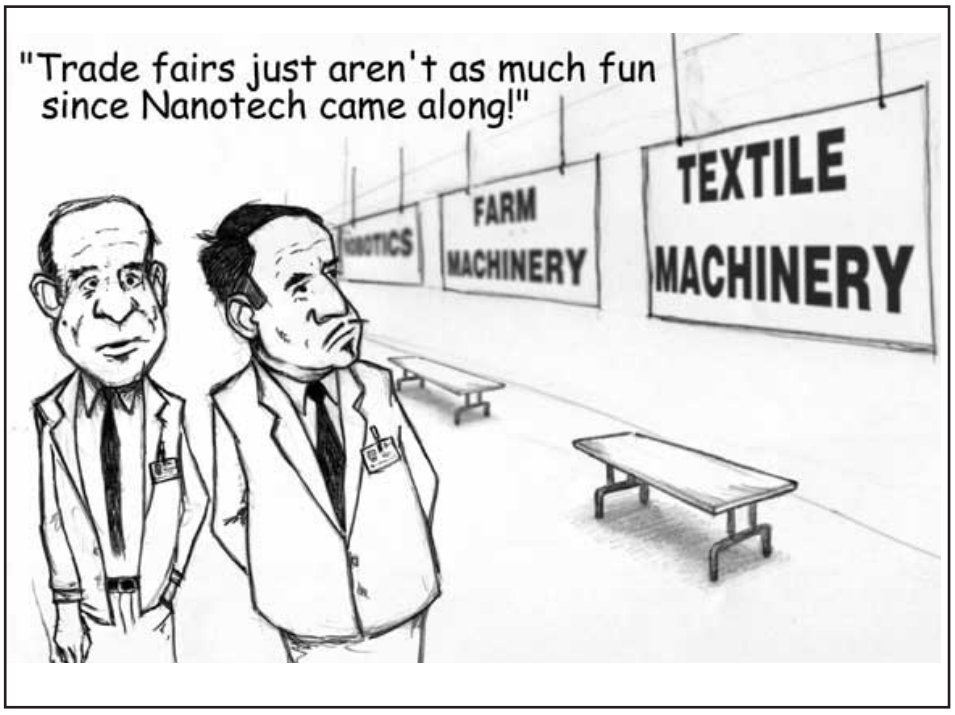
Innovative offerings

For instance, banks are now getting into video banking, which combines self-service with a face-to-face interaction between a customer and a customer care executive. Alongside, banks are also introducing RFID (radio-frequency identification) based branches that assist in recognising the customers on the basis of RFID chips inserted in their debit cards. Eliminating the need to carry cash or even cards by allowing users to pay via their mobile phones has been yet another innovative breakthrough.

Globally, there have been multiple options on mobile wallet and payment processes, where young customers can access banking services via social networking sites to make online payments. That technology is not anti-people is evident in how it has helped serve people and bring them closer. This had been made possible by a creative use of social networking channels by banks. A superior customer experience is the outcome of several pieces fitting into the bank's bouquet of offerings. For what may seem to be a simple service such as cash-on-delivery, it needs to be constantly backed up by a combination of logistics, technology, IVR, phone/e-mail/chat support, and Point Of Sale terminals with the delivery boy. And, importantly, all of these supports need to work without a glitch every time a customer places an order, for a seamless experience.

User experience

Instead of deluging users with technology-heavy products, the focus has now changed towards shaping user experience. Thus banks are increasingly motivated to deliver products that are designed around how people naturally do things. The bottom-line is that user experience has, and is going to be the centre of all technology-led development. Thus, banks will strive to provide the best of the both worlds – by marrying technology with human interface.



More than megapixels - what really counts in a smartphone camera

http://gadgets.ndtv.com/mobiles/features/more-than-megapixels-what-really-counts-in-a-smartphone-camera-495572

Just about every new phone that launches has ads that focus on photography. While most refrain from saying it in as many words, manufacturers manage to coyly suggest that their phone's camera is better than even a DSLR, pointing, on most occasions, to the high megapixel count. Nokia holds the crown for the smartphone with the highest-megapixel count with the 41-megapixel 808 PureView and the Lumia 1020, though rumours now point to a 50-megapixel camera in Oppo's next phone.

In real world testing though, only a few phones have managed to come close to the quality and control that you get with even a mid-range point-and-shoot camera - forget about being better than a DSLR. Why is that?

When Nokia first came up with the PureView technology used in the 808, its announcement of the 41-megapixel camera toting phone made no sense. However, thanks to the camera companies themselves, the term megapixel had become a kind of shorthand for image quality. When point-and-shoot digital cameras were gaining in popularity, Nikon, Canon and other manufacturers got into a race to fit in higher-resolution sensors into their compact cameras, and marketed the term widely. This has parallels with the GHz wars that played out between Intel and AMD during the heydays of the PC industry.

Today though, this tactic has come to haunt the camera manufacturers (much like what Intel and AMD suffered), and people in both Canon and Nikon are the first to point out that a 5-megapixel resolution is high enough to take a clear print-out on an A4 sized page.

That, incidentally, is the standard resolution for images you will get on the Nokia Lumia 1020 PureView. This is because Nokia uses a technology called oversampling, which uses software to treat the individual pixels as a single unit, and essentially creates artificially big pixels on the image sensor.

The image sensor - essentially a plate where the light falls through the lens, where the picture is formed - is probably the most important factor in actually determining quality. NDTV Gadgets spoke to Abhishek Singh, a Technical Officer at Nikon India, who shared his thoughts on the subject.

"The current thinking about megapixels is highly misleading," Singh says. "As a measure of resolution, it just tells you how big the image you're taking is. How much can you crop, without pixelation. That's when the original image is too small and you zoom, so it starts to look blocky. But with a 16-megapixel image, even if I crop to 50% of the image, it won't look pixelated when printed."

In fact, the 8-megapixel iPhone 4S camera was used by the Time magazine in November 2012 for its cover photo. The only time you would actually use a full 41-megapixel image is if you wanted to print the image on a billboard, which is why Nokia over-samples the pictures and produces clearer 5-megapixel.

The real reason that a Lumia 1020 produces better pictures than it's contemporaries is twofold. One of the reasons is that it simply gives the user a lot more control over individual settings like aperture. But the first - and most important reason - is that it has a much bigger sensor than any other smartphone (other than the 808 PureView).

"The image is formed when the light forms on the sensor," Singh explains. "If the sensor size is big then the image will be more detailed, even when you crop into smaller parts of the image and enlarge them."

So where do the megapixels fit into this? According to Singh, the problem comes when you try and pack too many pixels into a small sensor.

"It's like a room. A room that has space for 10 people, you put ten people there and everyone is comfortable. But when you squeeze 20 in there, then it becomes uncomfortable, and when you reach 40 people, no one can breathe," Singh says. "When you pack the individual pixels too tightly on a sensor, the image quality goes down." That is why the images on many budget phones look blurry as they struggle to balance 'advertising friendly' megapixel counts, while still keeping the sensor small enough to fit on the thinner than ever devices.

According to Singh, finding out about the sensor size of a device - instead of the megapixel count - is a quick way of knowing how clear a picture will be, whether you

are looking to buy a smartphone, or a compact digital camera. He says that another detail that casual buyers need to learn more about is the ISO or sensitivity of a camera. “A high ISO setting means that you will be able to take a picture in poor lighting without difficulty, but what’s happening is that your camera (or phone) is electrically stimulating the sensor to brighten the image. So this can introduce graininess into the image as well.”

With a growing trend towards low-light photography and a popular shift away from flash photography, Singh says buyers should also look at the lenses they are getting. Aperture, or the size of the lens opening through which light falls on the sensor, is very important in these scenarios, he says. He adds, “an aperture of f2.2 or f1.8 is becoming more common even in the smaller compact cameras, because of low-light photography.” So when a phone’s ad promises better pictures in low-light conditions? That has nothing to do with how many megapixels are mentioned in the ad.

Camera manufacturers deserve their share of blame for making people equate megapixels with quality, but it’s a figure that phone makers picked up and ran with because it is an easy competition. The fact is that if you want a phone that is super slim and super light and still has a battery life that will last a full day and more - then some compromise has to be made, and that is often done by making a smaller sensor, and making compromises on the lens. If an 8-megapixel camera is good enough for Time magazine’s cover, then maybe it’s time for customers who’ll just be sharing pictures on Facebook to think about what they want from a smartphone camera - and the answer is almost never more megapixels.

Gizmo Talk

TripButler

http://seqa.com.au/portfolio_1/travelling-with-technology/

Whenever you travel abroad, the one thing that worries almost everyone these days is the cost of data roaming. The phone companies charge ridiculous amounts, however the Austrian born ‘TripButler’ offers affordable access to password protected internet for up to five portable devices. Acting as a WiFi hotspot that runs for up to 10 hours, the TripButler is small and compact enough to fit in your pocket and within seconds of turning it on you have access to internet at speeds of up to 7.2mbit/sec.

To use the TripButler, all you have to do is order online by selecting the country you are visiting and how long for and it automatically creates a package for you. Your TripButler will be delivered to you within 7 days of placing your order. If you run out of Internet usage you can easily recharge per MB for only US$0.027. The TripButler can also be used to make international calls, even to mobiles, for only US$0.26 per minute! It can even be used for local multi-player games. To send it back, pop it in the provided envelope and into the post and TripButler will ensure that all personal data is deleted.

There is however a catch. This technology is very new and for that reason is only available in certain European countries. There are 42 countries in which it is available, so if you are traveling to Europe, you will be covered. Now to the cost, which is by far a lot cheaper than internet roaming. Keep in mind that this device supports up to 5 devices, which means you would alternatively pay 5 sets of international roaming data. For a 2 week trip on the multiple countries program covering all 42 supported countries, the TripButler will cost US$98, that’s only US$7 per day! This includes 700MB of data and any extra data will have to be added by you, ensuring that there are no hidden costs. There is also a US$97 deposit that is refunded on return.

This piece of technology is changing the way we use the internet while overseas and allows you to keep up to date without coming home to a huge bill from your telephone provider!

www.tripbutler.com/en/

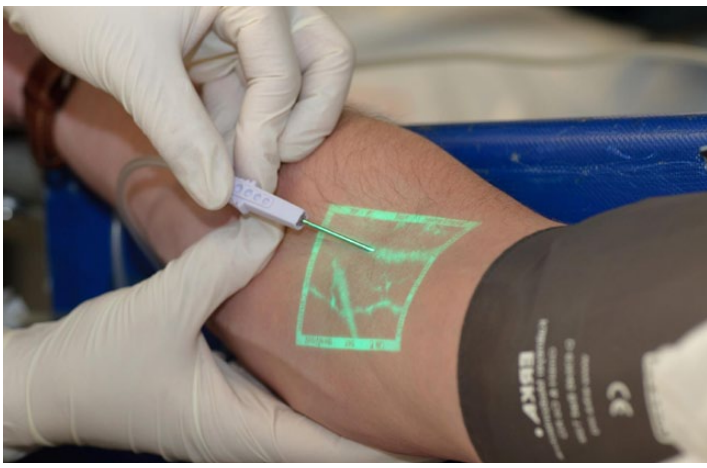
“Our School computers are a month old. How can we become competitive in the job market, if we are being trained on obsolete equipment?”

New Tech Means No More Hunting for Veins

http://www.healthtechzone.com/topics/healthcare/articles/2014/11/04/392960-new-tech-means-no-more-hunting-veins.htm

Whether it is to deliver medication or draw blood, nurses have to find veins from many different types of individuals. While some people have veins protruding throughout their arm, others don't have anything visible, nurses can see to guide them. Neonatal and oncology patients, people that are overweight and children present challenges only the most experienced phlebotomist can handle. However, by using near-infrared light technology nurses can now find the optimal venipuncture site even for the most difficult cases. Although the technology has been around for more than four years, it is finally seeing increased adoption after many real-life user cases by healthcare professionals around the world proved its viability.

VeinViewer Flex by Christie Medical is a portable vascular access imaging device that uses HD imaging and Df² (digital full field) technology to deliver a clear image so hard to see veins can be identified easily to avoid complications.



The device works by projecting near-infrared light on the desired location, which is then absorbed by the blood and reflected by surrounding tissue. The VeinViewer captures, processes and digitally projects the veins on the surface of the skin with an accurate real-time image of the patient's blood pattern.

The company uses a patented technology called AVIN (Active Vascular Imaging Navigation), which allows practitioners to see blood patterns up to15mm (0.59 inches) deep and clinically relevant veins up to 10mm (0.39 inches). With this type of visibility clinicians are able to visualize venipuncture sites Pre-, During- and Post-access (PDP) to avoid accidental punctures and the complications they may cause.

This portable unit can be used across different environments including emergency medical services (EMS), home healthcare, surgery units and blood/plasma centers. It is especially useful for critically ill patients that have been subjected to repeated injections for medication and tests, such as chemotherapy patients and infants in neonatal units.

"Pediatrics can be one of the most difficult patient populations for venipuncture procedures. Consider the challenges associated with pediatric vascular access: small veins, limited access points due to size and the presence of "baby fat" and managing the anxiety of the children and their families. These challenges are the reason that pediatrics is typically one of the first areas within a facility to adopt VeinViewer vein illumination," Chritstie Medical.

VeinViewer has successfully been used in real-life applications globally in: hospitals, pediatrics, emergency, oncology, Pre-Op, radiology, aesthetics, outpatient centers and non-hospitals.

Did You Know?

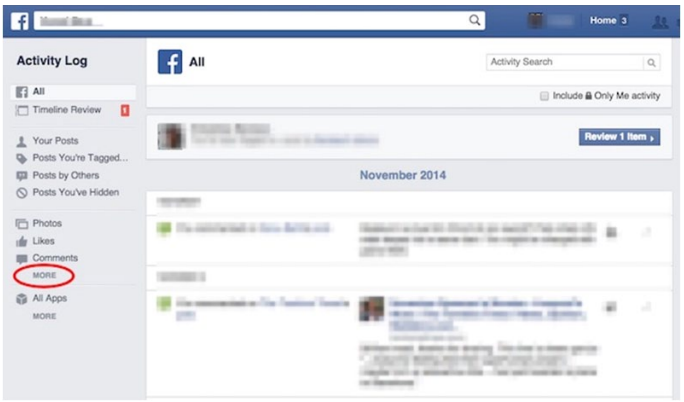
The new section in Kbytes "Did You Know" will amaze you with interesting facts about technology. You won't leave the page without learning something new. Technology has always inspired all of us and helped us to reach to new heights beyond our capacities. Therefore this is our effort to bring to you all information that will help you in using technology in a better manner.

That Facebook Records Your Search History? Here's How to Delete It

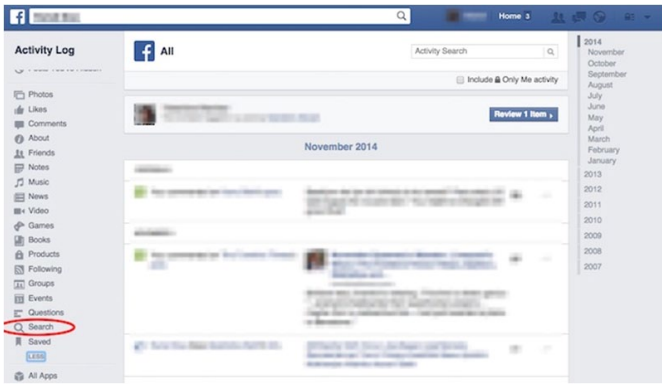
Every time you search for anything on Facebook - from looking up an ex (we've all been there), to searching for bands or searching for the Facebook page of your favourite celebrity - it is stored as a part of your Activity Log. All this activity is stored as private, visible only to you (and presumably Facebook) so it's not necessarily a violation of privacy, but we're a little uncomfortable with the idea of all our searches being stored as a long term record.

Facebook says it stores these searches in order to show you relevant search results. But if you would rather not have this, erasing them is pretty simple. Just follow these steps:

1. Open this page on Facebook. Once you sign in, you'll be shown your entire search history on Facebook. To find it yourself, you can go to your Profile, then click on ViewActivity Log. On the left-hand side, find the section where it says Photos, Likes and Comments and click on MORE.

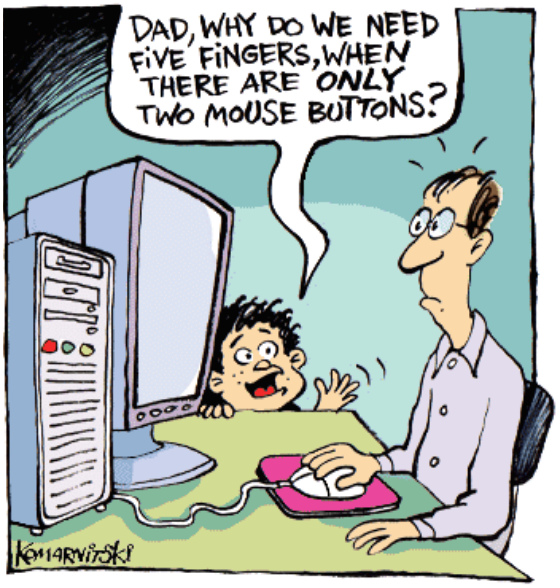


Next, select Search from the list on the left.



2. To remove individual entries from this record, click the "Hidden from Timeline" button on the right side of each entry (it looks like a no-entry traffic sign), to the right of the lock icon. Click Delete and then Remove search in the pop-up, to remove the entry permanently.

3. To remove your entire search history, just click the Clear Searches link on the top-right, to the left of the magnifying glass icon. Then click Clear Searches in the pop-up to remove these search items.



Tech trivia

- Microsoft's first software product was a version of BASIC which was sold for computer called ALTAIR, which one could build himself.
- The online shopping site Amazon was earlier known as "Cadabara".
- Bob Metclafe got hold of Xerox PARC's Ethernet and founded the company 3com
- Motorola came up with the first handheld cell phone in the 1970's.
- "Made in Japan" is the autobiography of the famous personality called Akio Morita, Co-founder of Sony

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Published By : Kohinoor Group, Kohinoor Corporate House, Senapati Bapat Marg, Dadar (West), Mumbai - 400 028.
email : kbytes@kohinoorgroup.co.in **Web** : www.kohinoorgroup.co.in **Resident Editor:** Makarand Vagaskar, **Language Editors:** Ullhas Kulkarni, Mugdha Deshmukh
Principal Correspondents: Saurabh Kulkarni, Mithun Sherlekar, **Special Correspondent:** Milind Patwardhan, **Design :** Kohinoor Design Cell.