udbhava

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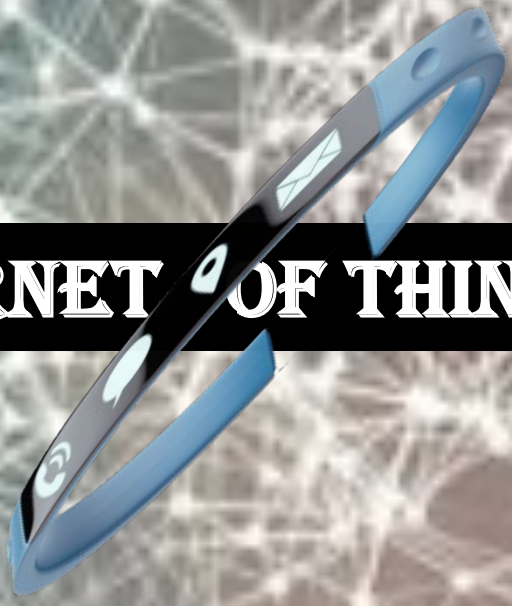

INTERNET OF THINGS

KENOSYS–The Lean Operations & Systems Club
AN INSTITUTE OF MANAGEMENT PUBLICATION
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IN THIS ISSUE// AUGUST 2015

By 2019, companies will ship 1.9 billion connected home devices, bringing in about $490 billion in revenue. Google bought smart thermostat maker, Nest Labs, last year for $3.2 billion, and Samsung purchased connected home company SmartThings for $200 million.

FROM THE EDITORS DESK - udbhava

Prof. Sirish Venkatagiri
Faculty Co-ordinator, udbhava

Today, all the incumbent companies as they are called (the existing large organizations) are being buffeted by the nimble footed attackers (the newcomers and startups).

Some of the disruptive technologies are Social, Mobility, Analytics, Cloud Computing, and Big Data. Along with the Internet of Things (IoT), these technologies go by the name of 'Digital'. Thus, the incumbent companies are working very hard to move with the changes. For the IT services vendors, this is a wake up call, as the IT budget is now split between the CIO and the CMO (Chief Marketing Officer), where the CMO calls the shots for the 'Digital' budget.

A sign of the times to come is the MarTech conference organized by NASSCOM, where both CIOs and CMOs will find topics of their interest. IoT has been taken very seriously by organizations such as GE, which have invested substantially in this technology.

This issue of Udbhava is therefore, timely. Enjoy!

Regards,

Sirish

Internet of Things is going to revolutionize the home automation space in such a way that the tire by Dunlop did to the automobile industry [Anonymous]

IOT: THE NEXT DOTCOM BOOM?

Aashish Yadav V V Botta
1527101

I still remember walking down to the nearest internet cafe and spending INR 30 for an hour's usage of painfully slow internet; all to stay connected. Today, we have our laptops, mobile phones, even watches and spectacles which not only help us stay connected but also enable us to do what we want. All this is presumably possible with today's technological prowess.

Today's fiction is tomorrow's reality and the evidence for this lies in the remarkable efforts made in every field, powered by an insatiable need to reinvent and incrementally improve what currently exists. And one such development in the recent years is what is called the **Internet of Things**.

Imagine being able to do everything remotely with only one device! Imagine your car, your house, your office, your oven, your refrigerator, maybe even you shoe rack all connected and "talking" to each other and doing their work without you being involved directly ! This is what the concept of Internet of Things details and drives forth. IoT's applications and outreach can be so widespread that by 2020, there would be over 26 Billion devices connected to the IOT. Now that's a huge number isn't it?

But that's just the perspective of a general household consumer. Applying some business thought will reveal that the applications are endless. Consequently, the IoT space offers an array of opportunities for today's entrepreneurs.

With the advent of a concept as revolutionary as the Internet of Things, one can even envision Mega factories running round the clock all by themselves, vehicles being driven with zero human involvement, tens of thousands of acres of land being cultivated with machines alone and minimal human effort. Remember those sci-fi movies from the stables of Hollywood? IoT's brought them closer to reality.

This could turn out to be something close to the next dotcom boom; in fact exponentially bigger than that; maybe the next revolution. Given IoT's potential to change the way the world works and communicates, it is up to us to leverage it in every aspect and sustain the business growth in the coming decades.

In 2008, there were already more "things" connected to the Internet than people. By 2020, the amount of Internet-connected things will reach 50 billion, with $19 trillion in profits and cost savings coming from IoT over the next decade. - Cisco

IOT- OPPORTUNITIES AND CHALLENGES

Manojkumar Hiremath
1420318, MBA (GM)

IoT stands for Internet of things which in itself explains that it is things that are connected to internet which include sensors, devices, actuators, transducers any equipment or material thing (further referred as THINGS) which in some way are able to communicate via internet.

IoT is a concept where in all these THINGS are connected to internet and communicate via internet and can be intervened or controlled through internet. They also generate data and can be stored on cloud for further processing or the data required for control mechanism of these THINGS may exist on cloud itself. The crux of such an exercise is to achieve improved efficiency, effectiveness, accuracy and economic benefit.

Few specific examples of IoT which will help understand this concept include

Smart Home: Smart home, widely working on ZigBee protocol (considered as most secured and safe till now) is basically automation of lights, AC, door lock, Curtains etc. at home and also enables communication via the internet through a gateway to any smart device connected to internet and is accessible to any authorised user so as to monitor or control home appliances sitting globally anywhere using a smart home specific application.

For example a Chinese brand for smart homes called 'Wulian' which entered Indian market recently has some of its application mentioned as follows which gives you a flavour of what it has to offer.

- **Scene Control:** Users can customize the multiple scene modes for lights, AC, multimedia devices etc. at once with scenes like home, out, party, visitor, sleep etc.
- **Linkage Control:** There is a linkage relationship between smart home devices and you can choose the target devices to make joint performance according to your actual needs, building your own personalized smart home system. For example when you enter your bedroom the curtain may open and AC gets on and adjusts temperature according to ambience.
- **Remote Control:** You can have all appliances easily under control through a cell phone or tablet that's connected to the internet anytime, anywhere.
- **Security monitoring:** Security protection network is established by all sorts of door magnets, window magnets, infrared motion and other detectors. Smoke, flammable gas leakage and other detectors can sense the concentration of smoke and flammable gas at homes.

The growing trend towards adopting Smart Homes using IoT is close to 60% -70% and mainly by middle and up above middle class families who are aware of such luxury, mostly during house construction and also by many builders for apartments and offices in metro, tier 1 and in few cases, tier 2 cities.

The large scale usage of IoT consumer products look farfetched, but the shift and growth will happen rapidly as was the case with telecommunication and smart phones. There are less visible usages of IoT and first of its kind are smart homes in consumer category and automobile telematics in commercial category.

There's a day coming when IOT will be nothing special or a luxury , it will become a necessity.

[Anonymous]

Cases like "refrigerators that order milk from the super market once the levels comes down" is a concept and products are in prototype stage and are only a part of academic discussion as this needs participation of all the parties involved in the chain and this is what I call large scale and yet to happen in the long run.

Major Limitations at present for this are:

- **Internet availability / bandwidth / reliability**
- **High Cost of IoT enabled systems and devices**
- **Overall infrastructure challenges:** Apart from internet the supporting infrastructure such as smart grids, traffic systems, etc., are required and not yet ready for IoT in India.
- **Lack of vendor activity**: "Global vendors, often mistakenly, assume that Indian consumers are "not ready" for advanced products, this is very much evident in the IoT space" according to the *senior vice president at 'BlueOcean Market Intelligence'*.

There are several well-known players into the market for IOT products like CISCO, Samsung, Ericsson, Schneider,Tech Mahindra, Bosch Software Innovation, L&T technology services, Nanjing IOT ,NetCore etc. who are venturing into market trying to give full-fledged solutions in IoT, but there are also players who just release one off products which will once be a part of IoT- for example Xiaomi's recently launched smart shoes.

Even Indian IT major players are working to bid for the recently launched Indian Government Smart city projects which is information I got from third party small firm which is also working with these big players for solutions and services.

Report by the McKinsey Global Institute estimates the economic impact of the IoT could be $3.9 trillion to $11.1 trillion a year by 2025 — from improvements in productivity and asset utilisation as well as economic gains of reduced disease and accidents, among others

Home: Chore automation and security- $170 bn - 300 bn

Offices: Security and energy - $70 bn - 150 bn

Factories: Operations and equipment optimization $1.2 trn-3.7 trn

Retail environments: Automated checkout $410 bn- 1.2 trn

Worksites: Operations optimization/health and safety $160 bn-930 bn

Human: Health and fitness $170 bn-1.6 trn

Outside: Logistics and navigation $560 bn-850 bn

Cities: Public health and transportation $930 bn-1.7 trn

Vehicles: Autonomous vehicles and condition- based maintenance $210 bn-740 bn

The Internet of Things isn't just about devices. A Dutch company uses Internet-connected sensors on cattle to tell farmers when the animals are sick or pregnant. Each cow sends about 200 MB of data per year.

THE INTERNET OF THINGS- APPLICATIONS GALORE!

Vijay Vasudevan G
1527332

The Internet of Things primarily means embedding electronics, software and sensors onto objects or 'things' so that they may remain connected to its user or manufacturer all the while. The first ever working model of the IoT was developed in Carnegie Mellon University in 1982. It was a vending machine which was embedded with sensors and it was able to send data regarding its inventory and the coldness of the drinks it stocked. From such humble beginnings, we have come far enough to work towards implementing such technology in almost all fields we come across- including healthcare, retail, agriculture, and logistics and so on.

This technology of IoT would be particularly useful in retail where there is a dire need for technological improvement as we still follow the practice of paying cash over the counter and use bar code readers that are time-consuming and primitive.

Incremental improvements in sensor networks and IoT in particular would greatly aid the retail industry where the shop-keeper would be able to know where his shipment is and when it would arrive. He could then arrange for transport and storage or arrange for an alternative in case the shipment is going to be late.

Just like we have a database in a library, maintaining one in a retail store would erase a lot of confusions amongst the shopkeepers and the customers. Installing sensors in the products they hold in the shop and in the inventory would help the shop keeper in identifying whether they possess a particular product or not. This would also aid in determining the sales and profits obtained from various types of products sold and hence useful to forecast demand in the market.

Another major application of IoT in retail is to know about the expiry date of perishable goods. A major problem that shopkeepers face is identifying the expired products and replacing them with fresh arrivals. IoT could solve this particular problem by helping to locate those products that are about to expire in order to call for replacements.

IoT is applicable in the field of product management as well. It can be used for the rotation of products in shop shelves and automation of the same in order to reduce labor costs and achieve a smooth flow of products from the storage to the shelves.

From one perspective, IoT is a boon to us. But if you were to look at it from another point of view, it would result in significant downsizing and loss of labor. Using machines gives the advantage of improved accuracy and precision, but they still lack something that humans have- emotions. People might still prefer the warmth of their neighbourhood grocery store, something that one would miss-out on if processes are highly automated.

Only 06% of things that could be connected to the Internet currently are, which means 10 billion things out of the 1.5 trillion that exist globally are currently connected. - Cisco

A CONVERSATION WITH DR. ANIL GUPTA

"Innovation has its repercussions. The fault is not with the camera maker, but the user."

Dr. Anil Gupta, Co-Founder and CEO of 'SmartBuildings' is a technology industry veteran. His passion in energy dates back to 1980s when he worked on energy conservation programs for California Energy Commission, Sacramento. He subsequently worked in AT&T Bell Laboratories in New Jersey and Sun Microsystems in Palo Alto. His more recent roles were VP and Site Leader of Sun India Engineering Center, Bangalore and COO of Aditi Technologies. Most recently, he was EVP and Head of Business Operations for Patni Computers. Dr. Gupta has a B.Tech from IIT Delhi, an MS from University of Delaware and a Ph.D. from University of California, Berkeley.

SmartBuildings is a breakthrough technology from UrjaGreen Technologies Pvt. Ltd. Based out of Bangalore, they develop innovative technologies for energy conservation, management, and monitoring in buildings. Their focus lies on energy efficiency, data center reliability, comfort and analytics.

Dr. Anil Gupta had recently addressed a corporate interface session at Institute of Management, Christ University, that dealt with 'Internet of Things and smart cities in India'. Excerpts from a brief interview-

Which all sectors would benefit from IoT? As the CEO of 'SmartBuildings', which all sectors are you planning to target in the near future?

The market itself is very huge. 'SmartBuildings' will not only concentrate on energy efficiency but also in sectors that include security, safety, convenience and other applications as per the market needs.

Given the growing population, specifically the aging population, healthcare seems to be a sector offering greater opportunities. And although commercially a tad difficult to execute, agriculture is too is a sector rich in opportunities as far as IoT is concerned.

Seeing so many opportunities ahead, will SmartBuildings try to reap all benefits of IoT in future?

Any start-up has to continuously make decisions and stay focused. Start-ups that try to venture into a lot of things generally don't maintain a good track record. But focusing on a particular field and delivering excellent results will imply greater customer satisfaction. Start-ups could then expand by leveraging their base of satisfied customers.

Speaking of efficiency, is 'SmartBuildings' particular about renewable energy?

We don't believe that we have any technological inclination towards deploying wind power or solar power. Solar energy has a huge potential but remains cash-strapped since it would require a multibillion dollar investment. Talking about wind energy, we have recently made a joint venture with ENERFRON, which is into wind power generation. Then again, it does not lay much emphasis on novelty in technology but makes use of standard technology.

What are the opportunities and challenges that companies like 'SmartBuildings' face in the Indian market?

Manufacturing has been a great problem for start-ups in India, which is why many start-ups outsource their manufacturing to China. A superior job will always be respected irrespective of the nationality or skin color or anything for that matter. But on the flip-side, it is much easier to launch a product and test it-out in India as compared to other countries like the US. We are able to roll-out products into the market much faster and hire employees at lower costs. What's most important is that we're able to look at volume sales because of the huge population.

Do you think our country's human capital is well-equipped with skills to handle the plethora of opportunities in the IoT space?

In human capital, India does not lag behind any other country. Although young and lacking in experience, it's a huge pool of talent we have in here. Speaking about technology, the number of people doing original work here are quite small and often people try to take the safer route. They prefer taking someone else's technology and deploying it. This may fetch faster results, but in the long run, inhibits one's growth, due to dependence on another's product or cost structure or features. The company would ultimately get stuck because of its lack of foundation in innovation. If someone has the courage to build a product from scratch and such ventures are encouraged, the opportunities for India in this space seem bright.

What is your opinion on the dark side of IoT?

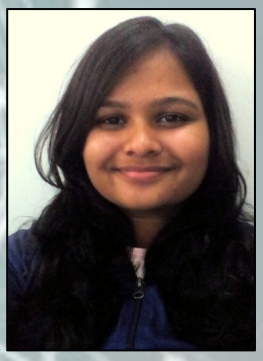
I very well agree that innovation has its repercussions. If one is determined to spy, one can track another's habits and even their movements. Not long ago we had an issue wherein a minister happened to spot a camera in a changing room; the fault is not with the camera maker, but the user. So yes, it can be misused. But this being the other side of the coin can't be avoided.

While hiring, what are the traits that you would specifically look-out for?

We always look-out for people who sport a good attitude in life, stay positive and are willing to learn new things. We aren't particular about what a person knows because learning is a lifelong process and anything can be learned anytime. We would definitely emphasize on ethical behaviour.

People are already concerned about IoT security. That's why 69% of U.S. consumers think they should own the personal data on all Internet-connected devices they own.

BLOCKCHAIN TECHNOLOGY AND INTERNET OF THINGS



Bandaru Naga Aparna
MBA (LOS), 1420241

Internet of things- a term that's been taking the technology world by storm! Abbreviated as IoT, it's been bringing alive so many applications every day- starting from ordering groceries automatically (Amazon's dash button), mobile health, home security, smart cities to smart grids. From simplifying processes to fool-proofing tasks, IoT's benefits are endless.

But with such advantages come allied problems and these tend to get deeper as IoT seeps further into our daily lives. An increasing number of people are concerned about internet security than before because of the quantity of information that's been exposed on the internet today.

Here comes the question: to what extent is it safe to upload data on the cloud? And how well is the data protected from hackers? "Blockchain technology" answers it all.

Blockchain technology is famous for its usage in Bitcoins by virtue of its special feature that helps provide tamper-proof data. It literally implies blocks (batches of transactions) in a chain, a sequential ledger of transactions. The data is stored in blocks for a set of transactions and each block needs a conformation in order to gain access.

The Blockchain is typically a data base, just that the storage and retrieval of data is done differently. No third party can tamper the data that's been stored in the data base. It's more like a public-private data base wherein the information about data is publicly visible but access to that data would require a private key. Blockchain technology eliminates the involvement of any third party for a transaction between two parties.

For instance, consider a situation where the groceries in Mr X's smart house are about to finish and the IoT devices in his house place an order on a grocery-selling website, the payment is done automatically with Mr X's approval and consequently the groceries arrive at the door step. Here arises the problem of security of the data that has been generated about Mr X- primarily his credit card credentials and payment transaction details. With the help of block chain technology, the data generated would be tamper-proof since there is no third party involved and the data is protected through cryptography.

The above is only a minor instance where Blockchain technology acts as an armour that ensures security of data in the IoT space. Organisations that are investing in IoT are also investing in Blockchain technology. This is akin to outsourcing security services for the IoT venture of theirs. Big players in the market like Bosch and IBM are investing in Blockchain as a way to reap the and its potential combination with the concept of IoT. Blockchain is certain to be that one technology that can help extend the concept IoT to the masses.

According to a report released by GSMA over the summer, 27% of all global M2M connections are in China, while all of Europe has 29%, and the U.S. has 19%

WEARABLE DEVICES IN EMERGING HEALTHCARE INDUSTRY

Soumya V S
1420257, MBA (LOS)

Quality of life these days is upheld by medical facilities that weren't accessible years back. The current medical scenario is not constrained to the treatment of diseases and there has indeed been a transformation towards disease prevention and continuous monitoring. The continuous monitoring of patients or even of people who are interested in their health has received increasing demand. In this way, the need and the possibility to scale down lab-scale monitoring/diagnostic gadgets have motivated numerous undertakings and businesses to make new or to scale down restorative applications. Recent advancements in miniature devices have fostered a dramatic growth of interest in the field of wearable technology. The endless interest the field has led to efforts in converting such initiatives to mammoth developments in the health care industry. It has seen many a drastic change in the past decade and such changes are expected to be the key for optimally operating our future society, particularly in healthcare. The technology today is subject to hard core changes and this might create a new vision for the healthcare industry. The products range from ring sensors to smart shirts and even smart brushes.

Let us see the emerging trends in healthcare in the past decade at a glance:

GOOGLE SMART LENS

This is the new product from the Google to detect the level of glucose in eyes. It consists of a glucose sensor and a wireless chip embedded between the two different layers of the lens. A minute hole is left in the lens to let the tear drops to enter the lens and hence detect the glucose level with the sensor.

BIOSENSORS CAPABLE OF SMELLING DISEASES

New wearable devices are designed with graphene sensors capable of detecting biochemical changes beneath the skin. These also include breath analyzers and electronic noses. Today's market expects a discovery that would employ sniffing techniques to detect cancers. LEAF

HEALTHCARE SENSOR

This device aids human beings to give alerts about body movements. It is designed with a tri-axial accelerometer which is capable of sensing a person's position. This would help the person in identifying the correct postures and movements.

In the decade leading up to 2020, China's government has committed to spend $603 billion for M2M connections. ***- The Motley Fool***

QARDIOCARE

It is an ECG monitor which can be wrapped around the chest. It consists of a wireless monitor devoid of sticky patches and gels. Continuous monitoring can be done with the help of an iOS or android app with Bluetooth capability. There is a cloud-based system through which the doctor can monitor the patient in real time.

TATTOOS MONITOR

These sensors in the form of tattoos can detect metabolite levels in sweat. The device is incorporated with electrochemical sensors that help in monitor lactate and pH levels in the sweat. This technology will benefit those interested in monitoring their weight and physical activities.

RING SENSOR

This device is designed to monitor the heart rate and the saturation level of oxygen. It is designed in the form of a sensor with a red LED, an infrared LED and a photodiode. A single processor is used to control the entire device. The transmitted waves can be monitored using a digital wireless communicator and later analysed on a computer. SMART BRUSHES These are capable of monitoring the cavities in the mouth with the help of pressure sensors.

MARKET VALUE OF WEARABLE SENSORS

Though the market value of wearable biosensors is comparatively less, it is expected to witness a huge growth in the coming years- a target of $18 billion is what's been set for the year 2018. The industry can now foresee a drastic change in the techniques used for heart beat monitoring, blood sugar testing, and drug discovery. Innovations in this area are likely to minimize machine complexity and capable of bringing more changes in the hospital approach. This will ease the use of therapeutic practices. Wearable biosensors technology will facilitate personalisation of healthcare thereby leading to the realisation of better healthcare for anyone, at any time and at any place..

The smart home industry was the leading industry in IoT market in 2014 with $79.4 billion in revenue, followed by smart cities at $59.2 billion and smart building/infrastructure at $25 billion. Those numbers are expected to increase substantially by 2020.

AUGMENTED WHEELS ON AUGMENTED ROADS

S Sreeharsh Unnithan
1527322

I was a tad surprised when I read an article that said that a decade from now, the driver's manual would begin indicating how your car will communicate with other cars, traffic signals, peripheral devices and even the roads. At that moment I didn't quite understand the statement, but right now I'm sure of the fact that whatever be it, such a situation is not far from reality.

Vehicle to vehicle technology has the potential to outshine all the other innovations brought in by vehicle and car manufacturing stalwarts. A highly adaptable and user-friendly innovation like vehicle to vehicle technology has proved to be the next generation up gradation, both in automobiles and roadways transport.

Vehicle to Vehicle (V2V) technology and Vehicle to Infrastructure (V2I) technology, collectively known as V2X technology in United States and Car2X technology in Europe, go hand in hand to improve road safety. It has helped reduce the number of vehicle accidents and car crashes to 76%.

At the heart of the vehicle to vehicle technology is an application known as 'I'M here'. This application tracks the information of those vehicles which are in close proximity and helps the driver to get information on the distance between his vehicle and other vehicles in the vicinity. It also provides information regarding the vehicle's position and speed, senses threats and hazards within 360 degrees in addition to the position of other vehicles and the threats or hazards they pose. This technology helps the driver to take calculated risks while driving. The application also provides driver advisory and warning alarms at appropriate times while on road.

Vehicle to vehicle technology when combined with vehicle to infrastructure technology can do wonders to transport and traffic management systems. A hybrid of both these technologies will keep a proper check on the traffic and curb the number of accidents, thereby providing a helping hand for those on road.

Autonomous vehicles are a big part of the Internet of Things. Last month, an AudiA7 drove more than 550 miles (from San Francisco to Las Vegas) almost entirely on its own. The car uses some of NVIDIA's processors as part of the brains behind the system.

HOW 3D PRINTING COMPLEMENTS INTERNET OF THINGS

Vaibhav Vikrant
1420332, MBA (LOS)

When we talk about enhancing technological capabilities, we refer to be doing so for technologies which are already in place. Same is the case with a technique known as Stereo Lithography, developed in 1986 by Chuck Hull, which was used for prototyping extensively by the design management teams for product design. Did anyone ever think then, that a machine, which makes prototypes, would someday be capable of making the product itself? Yes, the reference here is being made to the revolutionary 3D Printing technology which runs on the principle of additive manufacturing and makes it possible to turn a 3D modeled design into custom solid objects on demand.

In the course of time, this additive manufacturing technology has reached a level of technological maturity that beyond prototyping, it has potential to print almost anything. Plastic, rubber, metals are extensively printed these days and in years to come, even functional human organs. One of the well-known surgeons from California, Anthony Atala was able to print a kidney and present the same in one of the TED talks held back in 2011, pointing out its potential to revolutionize organ transplants. (TED talks, March 2011). Recently, few scientists at Cornell University had made an ear with a 3D printer by processing additive gels found within living cells which was made by fusing collagen derived from rat tails and cartilage taken from rat ears and was ready for transplant.

Internet of Things, on the other hand, is a network of non-living things, which has the potential to hook up almost any non-living thing for that matter to a network. Introspection on this line now would probably make you wonder if a technology like 3D printing - which has potential to print almost anything and IOT - which can get anything connected to a network, be viewed in conjunction to each other. These innovations, if viewed together have the potential for a series of innovations to follow in fields like Big Data and Medical science to name a few.

As pointed out earlier, the 3D printer is all set to revolutionize organ transplants wherein intricate details of the organ are provided to the 3D printer, ensuring that it prints just the right thing. Internet of things can further complement this innovation by tracking the transplanted organ's state from time to time, without even requiring the patient to be at the hospital. Internet of things can also be used as online control tools for the 3D printer, for tracking of material supply, build status and performance monitoring from anywhere, further enhancing its capability.

Internet of Things, by making use of already existing technologies like Wi-Fi and Bluetooth can complement the capabilities of a 3D Printer, enhancing opportunities for technological innovations in days to come. In a nutshell, when a world where everything is connected will meet another wherein everything can be printed, it will pave the way to take the world to new heights, and revolutionize the two innovative technologies.

The need for more IP addresses is all tied to the Internet of Things phenomenon in which everything from refrigerators to light bulbs are now connected online for users' access and control.
- Vint Cerf

ROLE OF IOT IN MAKING CHINA THE NEXT GLOBAL LEADER

Rishi Manish Kotecha
1527123

If anyone doubts the capacity and potential of Internet of Things to spark economic growth in developing countries, watching how China has welcomed IoT with open arms will help clear them. With plans to invest $800 million in the IoT industry by the end of 2015 and already holding a market of 74 million machine to machine (M2M) connections, China has become the global leader in the deployment of IoT. The Ministry of Information and Technology has estimated the market of the Internet of Things in China to reach an astounding $80.3 billion, a leap towards achieving the target of $166 billion by 2020.

The first few steps towards this goal have been taken by the government as they have established state-owned enterprise zones in the Sichuan province which focus on expanding the IoT market in the heath-care sector. Telephone booth sized “Health Capsules” are being developed to help the rural dwellers get their disease diagnosed by a doctor located at a distant urban city. With the help of such “health capsules”, low-cost check-ups will become a reality and so will a situation where people will choose a doctor online for diagnosis, get the prescription printed immediately and using this, purchase the medicines available at the capsule.

This is a huge step by the government which will slowly, but surely lead to the economic growth of the country in the near future. China is trying to assert more of a leadership role in the global economy. Its devaluation of the renminbi was the latest in a series of moves over the past two months to help boost the slowing economy and compete with the US Dollar and the Euro in Global trade and finance markets. By investing in the IoT space, China wants to change from the position of a follower paying royalties for foreign strategies to a state where they would create breakthrough innovations and set a standard for which other countries would pay royalties.

If China continues to invest and expand in the IoT sector, it would soon grow up to be a leader in the global space. By 2020, China will be defining the market rather than attempting to catch-up with the global super-powers. This is sure to brighten the global picture of the Chinese economy. The IoT market is the future and China is taking massive efforts to ensure they reach there first. I believe that with IoT, the Internet expands beyond laptops and phones into everything around us- transforming lives by making complex things a lot simpler.

CVS And IBM's Watson Cloud Pursue Ways To Predict Patient Health.

- Forbes

udbhava QUIZ

1. Which start up has invested $5M in order to bring together the two revolutionizing technologies, i.e., The Blockchain and the Internet of Things together to come up with a solution to most boring problems of life

2. What is the Amazons product that was released this year that works with IoT , that would send immediate requests to Amazon website whenever there's a deficiency of groceries at the customer

3. What was the name of character that is basically Internet of Things in the movie Iron Man

4. According to Cisco estimates, how many devices will be connected to the internet by 2020: a. 1 Billion b. 5 Billion c. 20 Billion d. 50 Billion

5. With the creation of the IPv6 addressing protocol, how many devices can be connected directly to the internet

6. What is the most common current deployment of IoTs
   a. Home automation devices
   b. Smart metering
   c. Sensor networks
   d. Internet connected stuffed animals

7. Who launched the app managed app managed router recently?

8. Who coined the term "internet of things"?

9. What was the first application of "IOT"

10. Earlier this year Amazon acquired a IoT PaaS company which brings additional capabilities in the form of standard protocols and complex event processing. What is that company?

Answers:

1. Filament
2. Amazon Dash Buttons
3. Jarvis
4. 50 billion
5. 3.4×10^{38} devices can be connected under IPv6
6. b
7. Google, manufactured by TP link
8. Kevin ashton, while working for procter and gamble in 1999
9. RFID identification tags to replace UPC bar code
10. 2lemetry

A $10 million clinical trial will use smart watches, beacons and other sensors to aid caregivers tasked with helping patients cope with dementia, and to extend the amount of time they can live at home. ***– IOT Journal***

TEAM udbhava

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LACHMAN

SHARAN

DISTRIBUTION

RAGHUNATH

NAGARJUNA

ARTICLE COLLECTION

SWAPNADEEP

VASUDHA

CORPORATE INTERVIEW

JOHNS

SWASTIK

QUIZ AND CROSSWORDS

NAGA APARNA

RADHIKA

DESIGN

BIJO

VAIBHAV

Intel's 5G future can turn humans into IoT device.The 5G network will provide a backbone for Intel's Internet of Things endeavors, and allow devices to connect at up to 100 times faster speeds than current 4G LTE technology today. *- The Economic Times, Aug'15*

udbhava

Udbhava is the official newsletter of Kenosys - the Lean Operations and Systems club of Kengeri Campus. It's objective is to keep everyone up-to-date on the latest happening in the worlds of Lean Operations and Systems

The word KENOSYS is derived from the Greek word Kenosis which means self-emptying of one's own will and becoming entirely receptive to God's divine will, to eulogise the benefit of the group than to self and to contribute to common good than to individual goal. In our context it means to spread knowledge among our fellow LOS students. The word was slightly modified from Kenosis to Kenosys so that it goes with Kengeri Operations System.

The Kenosys club is an initiative by the students of LOS (Lean Operations & Systems) of Christ University Institute of Management, Kengeri. Kenosys stands for Kengeri Operations and Systems. Kenosys represents the Lean Operations and Systems (LOS) club of MBA students at Kengeri campus of Christ University. The club is the brain child of 2010-12 batch of MBA-LOS students.

Kenosys is a LOS student's initiative which organises LOS related student activities so that value addition happens to LOS students in addition to course curriculum. This is also a platform for LOS students to showcase their talents in organising events. The regular activities under Kenosys are Udbhava news letter, corporate interface, Workshops, panel discussions etc. Under Kenosys platform, students are encouraged and supported for their innovative and creative value addition exercises in the arena of Lean Operations and Systems.

KENOSYS–The Lean Operations & Systems Club
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