



Internet Society India Mumbai

A Quarterly Newsletter by ISOC India Mumbai (An ICANN At-Large Structure)
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CHAPTER LEADER'S NOTE

The fast-paced technology is changing the world around us. One such technological phenomenon that has changed the way we interact with our day to day surroundings is the Internet of Things (IoT). From agriculture to aviation, pharmaceuticals to public transport, smartwatches to smart cities, business pursuits to home appliances, IoT sensors have permeated our lives. One of the main catalysts for the staggering growth of IoT is the widespread Internet connectivity. Recognising the way the Internet has revolutionised our lives through IoT, the ISOC India Mumbai chapter has chosen to dedicate the third issue of its quarterly Newsletter to the broader theme of IoT.

Our editorial team, comprising of volunteers coming from the diverse fields of -academia, corporate, government consulting and non-profit, have contributed to the rich content of the newsletter by bringing in their varied experiences, expertise, and understanding of the application of IoT into the narrative.

The newsletter begins with the **'Main Story'** that aims to address the various issues concerning the IoT security. Sneha, in her editorial, has explained the major security challenges of IoT and the plausible measures available like beta testing to resolve such issues.

In the **'Bits and Bytes'** section, Shveta introduces our readers to some of the events that ISOC India Mumbai has organised to familiarise the public with the various aspects of IoT applications and related safeguards. In particular, the chapter has held a session on the application of IoT in healthcare. Through its events, the chapter propagates a need for a more trust-based framework for IoT and promotes the Online Trust Alliance (OTA) framework.

The next section **'News from Other ISOC Chapters'** is an acknowledgement of the excellent work done by the ISOC chapters and ALSs across the globe. In this issue, we celebrate the inspirational work done by ISOC Afghanistan, ISOC Islamabad and ISOC Delhi. This collation of inter-chapter collaboration has been successfully completed by Sneha.

As always, the **'Internet World'** section brings some of the interesting articles on the world of the Internet. In this issue, Nupur and Pervaiz have shared articles on fascinating topics like how IoT shapes the structure of smart cities, whether IoT make us safer, is data the new oil?

To provide a platform for volunteers, where they can share their thoughts and opinions on myriad theme-related topics, the newsletter has reserved a special space for them. This edition of the newsletter has titled it **'What's Trending?'**. In this section, Prateek has presented an informative write up on the Internet of Payments, an innovative fin-tech trend that combines payment system and IoT.

'Our Good Samaritan' space celebrates the work of those individuals who have been desirous of contributing to the development of the chapter. **Devendra Naidu** is one such Samaritan who, in spite of not being a chapter member, has voluntarily worked for the growth of the chapter. We also have a **'Newsletter Crossword'** for you in the end. Do solve it!

We are grateful to **Mr. Ritesh Dhotre**, a talented graphic designer from Pune, for designing the cover page and illustrating the deep relation between Internet, Technology, and Mumbai.

Lastly, we are cognizant of the fact that we may not have been able to cover some of the key issues pertaining to the theme. But we happily invite you to engage with us on these issues. Hope you find this newsletter an informative and enjoyable read.

Nandita Koshal
Treasurer, ISOC India Mumbai

MAIN STORY

IoT Security: Maladies and Measures

Kevin Ashton, known as the father of IoT, once said, “The Internet of Things has the potential to change the world, just as the Internet did. Maybe even more so.” We are aware of the impact that IoT has in the world but there is no universal definition of IoT. The Internet Society published a whitepaper, “The Internet of Things (IoT): An Overview”, in Oct’15, which stated that the term IoT refers to scenarios where network connectivity and computing capability extend to objects, sensors and everyday items not normally considered computers, allowing these devices to generate, exchange and consume data with minimal human intervention.

Unfortunately, connecting the different devices to the Internet and allowing them to communicate with each other comes with its share of issues. Security is one of the important issues faced by IoT today. Cyberattacks on IoT devices are increasing day by day. According to the Nexusguard’s Q2 2019 Threat Report, the Distributed Denial of Service (DDoS) attacks increased by 1000% as compared to 2018. The Mirai botnet, used to launch a DDoS attack on Dyn, Inc. in Oct’16, is still in existence with as many as seven new variants of it available globally. In March’19, cybersecurity vulnerabilities were discovered in a wireless telemetry protocol used in various Medtronic cardiac devices. The wireless telemetry protocol did not implement the encryption, authentication and authorization principles which could lead to unauthorized access to any device, obtain highly sensitive information about the registered patients and manipulate the device settings. IoT security vulnerabilities can also lead to the destruction of real-world devices. Stuxnet, a computer worm, checks whether a computer is connected to particular models of programmable logic controllers (PLCs). It then alters the PLCs programming; leading to the too quick and too long spinning of the centrifuges which destroy the other computer hardware equipment. Simultaneously, it leads the computer to believe nothing is wrong with its equipment making itself virtually impossible to detect. Such IoT security attacks could be avoided by mandatorily changing the default credentials before first use, limiting the login rate, encrypting the sensitive data, and using multi-factor authentication.

The white paper, “IoT Safety and Security as Shared Responsibility”, co-authored by Vint Cerf, states that as the things currently on the Internet do not belong to any single stakeholder, the governing of the net continues to be a matter of shared responsibility. The paper talks about another solution- beta testing, to expose the product issues before being rolled out on a wider scale. As per the International Software Testing Qualifications Board (ISTQB), “beta testing is simulated or actual operational testing conducted at an external site, by the roles outside the development organization.” The testing is used to evaluate client satisfaction with the product by letting the end-users provide their validation and feedback.

But even beta testing has its share of issues. Some of the issues reported by the end-users are duplicate while some of them are unreproducible. Finding the apt sample set of end-users and maintaining their participation is also a challenge with the beta testing. Another issue is that testing is a time-consuming process which might lead to delay in the final release of the product. Also, companies engaging in beta testing are exposing their customer base to an unfinished product and, thus, putting their company’s reputation at risk. This was observed in the case of Apple in Oct’11 when it released a beta version of Siri. This Siri version had a lot of bugs and was unable to recognize certain English accents. Although Apple articulated that this was a beta version, loyal Apple users were shocked with the product quality and heavily criticized Apple for such a low-grade product. Such issues could be avoided by making sure that the final version of the product (market intended) is provided for beta testing, shortlisting the beta testers and making them aware of their responsibilities and schedules.

With an increased understanding of IoT and its related technologies, the security and safety interests of users could be better protected with the efficient implementation of improved multi-stakeholder practices. Keeping this in mind, Crowdsourced Testing should be highly encouraged. It is a process of involving crowd i.e. real users, testers, other developers across the globe into testing the product under real-world conditions. It is a unique way of involving hired consultants, skilled users and professionals from diverse backgrounds to test various products on multiple platforms. This might be the next logical step for the multi-stakeholder model in to overcome the challenges faced by IoT in today's world.

BITS & BYTES

A Seminar on 'IoT : Need for a Trust Based Framework'

IoT promises to significantly influence our technical, social and economic landscape. Some anticipate that with as many as 100 billion IoT connected devices IoT will have a global economic impact of 11 trillion dollars by 2025. To introduce engineering students of different aspects of IoT and related security issues, ISOC India Mumbai had organised an interdisciplinary seminar on 31st March'18 at Vivekananda Education Society's Institute of Technology, Mumbai. Through this seminar, ISOC India Mumbai emphasised on the importance of context, syntax and semantics in a language to provide a framework for evaluating the efficacy of secure and private communication. The seminar also stressed that this design of the framework is a joint responsibility of all stakeholders that will guide them to design and use IoT devices securely and effectively. ISOC India Mumbai made the participants aware of one such evaluative framework- Online Trust Alliance(OTA), an Internet Society initiative. Students were introduced to OTA frameworks in the seminar for different stakeholders. They were then asked to evaluate their IoT products like smart-watches, smart-phones amongst others. The session ended with Prof. Nagananda thanking the ISOC Mumbai team for their time and efforts. Read the full report [here](#).





A Talk on “IoT and IoT Security Issues in the Healthcare and Pharmaceutical Sectors.”

Although IoT in the healthcare industry is not yet in widespread use, experts predict a massive growth on the clinical side as well as on the back end. ISOC India Mumbai volunteer, Ms Sneha Tambe conducted a session on the ‘IoT and IoT Security Issues in the Healthcare and Pharmaceutical Sectors’ in a leading multinational corporation on 20th November’ 19 at Hinjawadi IT Park, Pune. This corporation is a Fortune 500 company and has offices and operations in more than 200 cities in 52 countries. According to Sneha’s research, IoT can transform this sector by changing the way pharmaceuticals are manufactured and tested; how they are consumed by patients and how healthcare professionals are keeping track of patient’s dosage. Advanced sensors can be placed on manufacturing machines to ensure rigid quality control and also alert the stakeholders in case of contamination in a drug. One of the participants informed the audience that intelligent pills could track when the patients take their medication and could send missed alert messages. The participants also agreed that data security and privacy are critical challenges for IoT, especially in the healthcare and pharmaceutical industries. There is a need to safeguard the data to protect the individuals’ privacy and the data must be secured to prevent a threat from the competitors. Before IoT, this data was collected offline and secured by the organization’s information systems. But with IoT, the number of devices collecting this data has astronomically increased. Any device, if not protected, can prove to be a potential gateway for hackers. In the session, the term “medjacking”, the term coined for the medical device hijacking is was also explained by experts. One of the audience members asked a query about Internet Society’s work in IoT arena. They were informed that ISOC only endorses consumer IoT products that are compliant to the OTA (Online Trust Alliance). The informative session concluded with the audience appreciating the work of ISOC Mumbai volunteers for increasing awareness on IoT issues in healthcare and pharmaceutical sector. The full report can be accessed [here](#).

NEWS FROM OTHER ISOC CHAPTERS

ISOC AFGHANISTAN



Participants at IGF Afghanistan

Internet Society Afghanistan (ISOCA), in collaboration with Commercial Law Development Program (CLDP), UN IGF Secretariat (Geneva), Internet Corporation for Assigned Names and Numbers (ICANN), and the Internet Society (ISOC) organized the 3rd Internet Governance Forum in Afghanistan-IGFA, from 7th to 9th July 2019. The event brought representatives from multiple stakeholder communities to highlight the challenges, achievements and development of a common agenda for the future of Internet Governance in the country. The event saw a broad scope of discussions on Internet access, diversity, security, the Internet economy, and emerging technologies among others. The programme also included one-day training on Internet Governance, known as Afghanistan School on Internet Governance (AFSIG).

ISOC DELHI

Internet Society India Delhi Chapter along with ICRIER organized the ICANN65 Readout on 16 July'19. The interactive session gave an overview of ICANN65. The session saw the discussion on the evolution of the Multi-Stakeholder Model from ALAC perspective; provided an overview of the root server Governance; and discussed the AMAZON case. The updates from Universal Acceptance Steering Group (UASG), NomCom, NextGen were also shared.

ISOC ISLAMABAD



Participants at pkSIG 2019

The fifth edition of pkSIG was organized from 21-23 August 2019 at National Incubation Centre, Quetta. A total of 60 participants (33% female) and 15 speakers participated in the school. The programme featured lectures/discussions covering political, legal, economic, socio-cultural, technological and other dimensions of Internet Governance. PkSIG aims to educate the community about the latest trends in the national, regional and global Internet Governance (IG) issues, procedures and processes. The annual school features a rich mix of comprehensive and structured knowledge on various aspects of IG, the actors, issues, and settings surrounding it.

Session on “AI and Deep Learning” and “ISOC Grants Opportunities

ISOC Islamabad organized Session(s) on “A.I and Deep Learning” and “ISOC Grants Opportunities” on 19th July'19 at National Incubation Center, Islamabad. The event aimed to apprise the members of the concept, latest trends, benefits and threats of AI and deep learning in the digital age. The session also reviewed the opportunities and practical insight into the implications of these technologies for Pakistan as well as to debrief the members about ISOC Beyond the Net Funding Programme. The participants deliberated upon the issues of AI governance and unethical use of these technologies.

IoT Security Challenges and 5 Effective Ways to Handle Them

The DDoS (Distributed Denial of Service) attacks of 2016, shook the world and gave us a reason to be scared of the cybercriminals. Such attacks raise some serious questions about data privacy and the future of the use of our devices. However, all is not lost and this article generates hope and gives simple and implementable solutions to such problems. For example, simple solutions like the two-factor authentication, and biometrics. They ensure that nobody can have unauthorized device access or employ some endpoint security features like anti-malware or antivirus, which can then act as a wall to protect the network. Read the full article [here](#).

Smart City – A Dream Come True

Amsterdam, Copenhagen and a few more cities have realized the dream of a smart city which until recently was only a tale of a Science Fiction. A smart city is based on innovative Internet of Things (IoT) technology, powered by Low Power Wide Area Network (LPWAN). In simple terms, the IoT connects all the devices and objects with each other and with data centres that process real-time data for meaningful and intelligent solutions. For instance, driverless public transport that anticipates traffic and weather conditions, intelligent home appliances that directly talk to vendors or service centres etc. A smart city is not limited to rich men's smart homes. It has a broader perspective of reaching out to the common people. It has features such as – affordable housing (especially for the poor); assured electric supply; adequate water supply; sanitation (including solid waste management); efficient urban mobility and public transport; robust IT connectivity sustainable environment;

safety and security of the citizens (particularly women, children and the elderly); health and education among others. Therefore, e-governance and digitalization are at the core its structure. Read the full article [here](#).

How the Internet of Things (IoT) Is Making Us Safer

Shootings in the schools, glitch up in the railway lines, issues with prescription drugs getting spoilt before reaching the patient, growing worries about home security, among others have become today's reality. Can stricter policies be enough to curb such problems or do we need to think creatively and harness IOT to solve such issues? Many industries who have tried to use IOT have seen some positive changes to help solve some of these major hurdles, for example, Weka Solutions used IoT, and it helped save lives by protecting vaccines. With IOT in place, we are heading towards a smarter future. Read the full article [here](#).

Here is Why Data is Not the New Oil

The controversy that data is the new oil has been on for a while now. Although we are forced to believe that indeed, data is more important than oil, however, it makes an interesting topic of debate to explore the other side of the argument. Data is an infinite resource, whereas oil is finite. Unlike oil-mining, data-mining is safer and also can be put to better use, for example, to tackle bigger problems of world hunger, education, climate change, etc. We need to rethink about using data as it does not get depleted and disposing of it would certainly be a mistake. Read the full article [here](#).

WHAT'S TRENDING ?

INTERNET OF PAYMENTS

Imagine a future wherein you want to play *Halo Infinite*. Some casual browsing on your smartphone informs you that it would be better to buy a new Xbox Scarlett console to play it. You could have purchased the Xbox online but you think that an offline dealer might give you a better deal.

You request your smartphone to book an Uber ride for you to reach the nearest dealer store. You check into the store, get customised offers for Xbox on your smartwatch, play Halo Infinite as a rejuvenated Master Chief, shout out loud at your smart voice assistant to make a payment for the Xbox and then walk away with the console.

The realisation of the aforementioned scenario will require various devices to interact with each other as well as human beings. According to [Deloitte's Inside Internet of Things \(IoT\) Report](#), a well-developed Internet of Things ecosystem holds the promise to facilitate this realisation by supporting different forms of Internet Protocol(IP) enabled Machine to Machine(M2M), Machine to Human(M2H) and Human to Machine(H2M) Communications.

Specifically, a seamless user payment experience will play a critical role in the adoption of IoT supported products and make a better business case for such scenarios.

In this context, it is critical to understand the business concept of the Internet of Payments(IoP). According to [PricewaterhouseCoopers](#), IoP is a fin-tech trend that combines advances in payment technologies and IoT to create a safe, reliable and seamless payment experience for its users. According to [a report](#) by AT Kearney and Australian Payment Network, the technologies underlying IOP have accelerated the adoption of more open, modular and accessible payment technology infrastructures.

As payment technologies become more open and more interconnected, there is a growing threat of Internet-driven cyber-security issues. According to an [Internet Society Report](#), consumer products are specially characterised by weak security due to the economic factors and not the technical factors.

Would you consider paying an additional premium price for a more secure smartphone or a smartwatch? Shouldn't we go back to the old card-based payment infrastructure with limited Internet connectivity and well-understood user behaviour? Similar to many business trends, should we assume that 'this too shall pass?'

How can we improve the security and usability of these consumer products to facilitate a better IoP?

There is no definitive answer to it. However, the [Canadian Multi-stakeholder process](#) on enhancing the security of IoT consumer products can be an important starting point. With respect to usability, the challenge is more difficult as the user experience and delight can be highly subjective. Probably, the design thinking approach employed in the [work](#) of some of the banks can show us the way forward.

OUR GOOD SAMARITAN

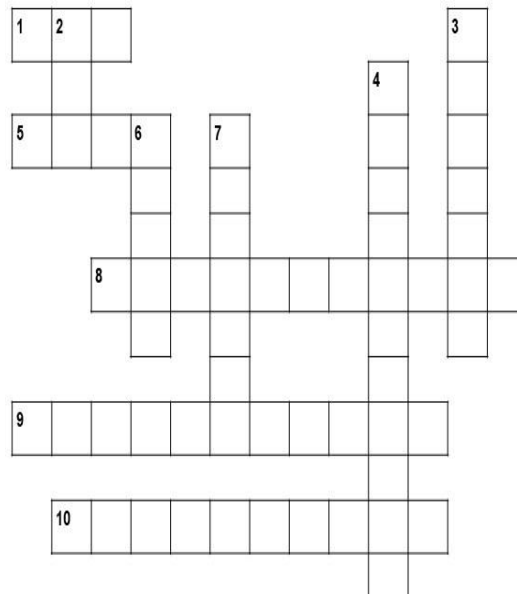
Devendra Naidu is a supply chain and a real estate consultant. He has 10 + years of corporate experience in logistics and realty business. He runs his own company, SIRIUS Developers, which is into real estate development, contracting, and consulting. He is also associated as a South East Asia Logistics Consultant for The Max Foundation, an NGO in Cancer Care Treatment.



Devendra played a key role in setting up the ISOC India Mumbai Chapter. He recruited volunteers and built relationships with other non-profits in Mumbai. He has been selected as a Chapter Fellow to represent ISOC India Mumbai Chapter at inSIG 2019. He is a good cricketer, a fitness enthusiast, a Taekwondo black belt, a sculptor and is fond of automobiles.

NEWSLETTER CROSSWORD

Internet Crossword-3



Across

1. a fin-tech trend
5. the new oil?
8. used to launch a DDoS attack
9. Xbox console game
10. term for medical device hijacking

Down

2. an ISOC Initiative
3. a computer worm
4. plausible solution for IoT security
6. a regional School of IG
7. a gTLD controversy

KNOW YOUR TEAM



Shveta Kokash is an ISOC India Mumbai volunteer and an accomplished professional with postgraduate degrees in mathematics, computer programming and education. She has more than 13 years of teaching experience. She is currently pursuing her Ph.D. in higher education, in the topic related to technology and instructional methods, from SNDT University, Mumbai; India's first woman university. As Vice-President of ISOC India Mumbai, Shveta has recruited new members, organised events and attended ISOC Mumbai events. She was also part of inSIG 2018 held in Delhi. A successful multitasker, Shveta handles her job, parental responsibilities, social responsibilities and ISOC commitments very well. She loves going on treks, is a Zumba enthusiast and participates in major half marathons regularly. She believes in living life to the fullest and making this world a better place in whatever way she can.

Sneha Tambe is one of the founding members of the ISOC India Mumbai Chapter. She is a technology professional with degrees in computer science and management. She has more than 7 years of experience in the IT industry and has worked with different clients like Lufthansa, Merck and the UK Government. As the Secretary of ISOC India Mumbai, she was invited to be a part of the APAC-ME Chapter meet in Nepal. She was also a part of the 'ISOC Beyond the Net' selection committee and helped review the various beyond the net applications. She was awarded a fellowship to attend inSIG 2018 at Delhi. She is a part of the current ISOC chapterthon process working group. She is member of the Steering Committee of inSIG 2019 and organizer for yIGF 2019. Sneha is a certified Karate Black Belt fighter. She also speaks French and Italian languages.



Nandita Koshal is an ISOC India Mumbai Volunteer and a Research Associate with a renowned private university in Delhi NCR, India. A postgraduate in economics, she provides research analyses, policy advisory and consultation in the social development sector. She has previously worked with the Ministry of Heavy Industries and Public enterprises, India and provided consultancy to the state government of Haryana, India on drafting of state higher education plan.. As ISOC India Mumbai Treasurer, she is responsible for maintaining Chapter financial accounts. She has also organised discussions around role of Internet and social media in higher education, need for deeper integration of technology with humanities, and advocated more engagement of women in technology. She was also a fellow at inSIG 2018, Delhi. She is the Editor-in-Chief for ISOC India Mumbai newsletter. She is also member of the Steering Committee of inSIG 2019. In her spare time, she loves to read, swim and travel.

KNOW YOUR TEAM

Nupur Vijn is an ISOC India Mumbai volunteer and a social service worker, who works with a Canadian Non-Profit. She has pursued her education in political science, english literature, public policy and social work from India and Canada. She works with the vulnerable population such as the drug addicts, people with mental health and the homeless population, and helps them achieve their goals. She is also studying to be an educational assistant to help the “special needs” children to succeed. As a volunteer with ISOC India Mumbai, she has participated in events helping to grow computer literacy amongst the refugees from Syria. She loves being out in nature. Through her efforts, she wants to make a difference in the lives of the people.



Mohammad Pervaiz is an ISOC India Mumbai volunteer. He is an Electrical Engineer with degrees in Computer Systems and Information Technology. He works as a Lecturer and has vast experience in the field of high school/college technical education. He also holds a diploma in School Management and provides career counselling to his students and motivates them to pursue higher education. He does volunteer work for a local NGO that works for the educational upliftment of underprivileged students. He strongly believes that technology can make the world a better place to live in and therefore it must cross all social and economic barriers to reach every individual. He loves to swim, travel, socialise, and take part in adventure sports.



This is a quarterly publication from ISOC India Mumbai Chapter. To share your feedback, please write to us at chapterleaders@isocindiamumbai.org or visit us at <https://isocindiamumbai.org/>

Editorial Team
Nandita Koshal
Nupur Vijh
Prateek Pathak
Mohammad Pervaiz
Shveta Kokash
Sneha Tambe



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