**VISIT OF CMAI DELEGATION TO SINGAPORE FOR PARTICIPATION IN COMMUNICASIA 2016 AND ASSOCIATED INDIA CONNECT FORUM DURING MAY 31 - JUNE 3, 2016 - A REPORT BY RAUNAK MARWAHA**

**About the Conference**

CommunicAsia is Asia’s largest integrated ICT event and is held concurrently with EnterpriseIT2016 and BroadcastAsia2016.

EnterpriseIT2016 is the leading event for companies to obtain the latest innovations and solutions necessary for them to stay relevant in today’s rapidly evolving consumer-driven business landscape. These solutions include Big Data Analytics, Cloud, e-Government& e-Services, M2M, Security, Smartcard/RFID, wearables and many more.

BroadcastAsia2016 is Asia’s largest representative event for the film, TV and entertainment industries. Comprehensive technological showcases cover the entire value chain from acquisition, postproduction to delivery, including the Content management and security, OTT, and TV Everywhere.

The conference serves as a platform for showcasing technologies that will shape the future. As devices become increasingly connected, the Internet-of-Things is expected to expand exponentially with the number of internet-connected devices predicted to exceed 40 million by the year 2020.

CommunicAsia2016 Summit covered 12 specially tailored tracks of which 5 were new and 3 interactive post conference workshops and 1 site visit that addressed challenging and integral issues facing businesses and organizations today.

**Key Statistics and Event Highlights for 2016**

* With 170+ astounding industry senior management presenting at the Summit, 52% of them were from the C Level/President/VP/Board Director level. 73% new speakers who participated for the very first time comprising of top enterprises such as NBN Co, Hermes, Tata Projects, Standard Chartered Coca-Cola, GSK, UBER, Citi, and lots more.
* 5 new dedicated tracks which covered Digital Transformation, Cybersecurity, Smart Cities, Internet of Things (IoT) and Software Defined Networks and Network Function Virtualisation (SDN and NFV)
* Combined morning sessions which saw attendees immersing into integrative sessions like the IMDA Singapore opening keynote, world renowned futurist’s visionary address and thought leaders’ panel discussion.
* First ever site visit to Singapore’s National Super Computing Centre (NSCC) - A state-of-the- art, High Performance Computing (HPC) facility, with computing, multi-petabyte data storage equipped with multi-Gigabit speed network resources to enable and solve scientific and technological problems for the nation.
* A spectacular global gathering of attendees from over 60 countries, with half of them coming from Asia.

The details of the various sessions attended and meetings held during the visit are as follows:

**1100-1120 hrs on 31th May 2016: Opening Address**

Mr. Victor Tang, Co-Chair, IPv6 Forum (Singapore Chapter)

**Proceedings**

The audience were breifed regarding the current state of affairs in areas of connectivity and smart cities. Mr. Victor Tang highlighted Singapore’s progress towards being on track for achieving a ‘smart nation’ status in 2025.

He also talked up Singapore’s move to restructure regulatory agencies IDA (Infocomm Development Authority) and MDA (Media Development Authority) into the Infocomm Media Development Authority (IMDA) and the Government Technology Agency (GovTech), which was first announced in January.

**1130-1220 hrs on 31th May 2016: End2End Direct Messaging in the IPv6 Internet**

Mr. Lawrence Hughes, CTO, Sixscape Communications

**Proceedings**

The small, much anticipated session began with a packed crowd in the IoT theatre with Mr. Lawrence Hughes starting his presentation by addressing the transformation from Ipv4 to Ipv6.

The key areas covered by him were:

* **Ipv6 as a base for the IoT**
* IPv6 has a number of major improvements over IPv4, including address scopes, working multicast, no broadcast etc.
* Dealing with issues such as limited bandwidth and integrating the mobile and Wi-Fi ecosystem.
* No need for Client/Server architecture. Network applications can now actually do Peer to Peer.
* For the first time in 20 years the internet will be monolithic again with no private internet and no more NAT.
* **END2END Direct Messaging**
* End2End Direct messaging will likely be the most common style of connection in the IPv6 Internet.
* Nodes with public IPv6 addresses can, in theory, make outgoing connections to, or accept incoming connections from, any other IPv6 node in the world.
* However, this allows the possibility of highly decentralized messaging, with connections going only over the shortest network path between two nodes, and no intermediary servers. This is actually the basic model for **5G telephony.**
* Performance is limited only by the network path between the communicating parties.
* End2End decentralizes the flow of traffic making it more difficult to monitor or control and increase overall system capacity.
* Even if the user’s ISP connection goes down, he/she can still communicate with people in his/her LAN.
* **6LoWPAN**
* Ipv6 over Low Power Wireless Personal Area Network is a networking technology or ‘adaptation layer’ that allows Ipv6 packets to be carried efficiently within small link layer frames as those defined by IEEE 802.15.4
* The most widely used routing protocol for route-over 6LoWPAN networks today is RPL (pronounced “ripple”) as defined by IETF in RFC 6550.
* 6LoWPAN radically changes the IoT landscape by
* Using an adaptation layer with 2 ammendements to simply datagram transmission between the different layers.
* No NAT which means no need for datagrams to be routed indirectly.
  + **M2M**
* Machnies running Ipv6 are enabled with the power of generating their own address which is unique and there is no dependency on the DHCP. This is done by a procedure called DAD (Duplicate Address Detection).
* No NAT means the machines will be able to communicate with each other without any intermediate server leading to reduced latency period and increased connectivity.

**1230-1250 hrs on 31th May 2016: Product Innovation & IPv6**

Mr Frederick Liau, Chief Innovator, BetaMovement

**Proceedings**

Talking about how digital is fundamentally changing the way companies do business, Mr. Fredrick Liau addressed the audience about the power of cloud, IPv6, mobile devices, IoT and data and them being the primary force of disruption to business models, products, services and customer experiences.

With the key agenda of focusing on quality of not just the product, but the role of ‘Servitisation’ was the highlight of Mr. Liau’s address.

The role of Servitisation as a key component of a profitable business model was explained by examining the business models of companies like General Electric, CAT and Xerox.

The presentation given was divided into 3 phases which dealt with:

1. **Creating Value**

Via R&D and exploring the customer needs.

Right marketing and pricing skills by finding an apt balance between margin and market share.

1. **Delivering Value**

Via branding, sales and marketing

1. **Capturing Value**

**1300-1320 hrs on 31th May 2016: All about NFV and IPv6**

Mr Adam Nardella, Director, Telco & NFV Solutions, Red Hat Asia Pacific

**Proceedings**

Network Function Virtualization (NFV) is an initiative to [virtualize](http://searchservervirtualization.techtarget.com/definition/virtual) the network services that are now being carried out by [proprietary](http://whatis.techtarget.com/definition/proprietary), dedicated hardware.

Mr. Adam Nardella talked about the combined solution of Red Hat Enterprise Linux and Red Hat Enterprise Virtualization that enables organizations to virtualize mission-critical applications.

**Advantages of Virtualization:**

* No vendor dependency with a fully open source solution.
* Affordable : Lower total cost of ownership (TCO) and faster return on investment (ROI) than an equivalent proprietary solution.
* Network administrators will no longer need to purchase dedicated hardware devices in order to build a service chain.

**Future Action**

CENX has teamed up with Brocade, Red Hat, and RIFT.io for an initiative aimed at building end-to-end service orchestration and management solutions to accelerate the deployments of software defined networking (SDN) and Network Functions Virtualization (NFV) for services providers.

The initiative highlights how interoperability between vendors can help accelerate time to market for service providers seeking to efficiently operationalize their SDN and NFV deployments using Lifecycle Service Orchestration (LSO) capabilities.

**1330-1350 hrs on 31th May 2016: Uber’s smart-city contribution: Public transit boost and carpools-on-demand**

Mr. Chan Park, Managing Director of Southeast Operations, Uber

**Proceedings**

Speaking during a ‘Smart Cities’ track at the CommunicAsia2016 Summit on Tuesday, Mr. Chan Park, Uber’s managing director of Southeast Asia, said Uber helps cut traffic congestion and associated pollution while creating economic opportunities for part-time drivers and improving safety. He bolstered his claims with data taken from Uber and third-party research firms.

He cited the example of Singapore where 29% of Uber’s business begins or ends near a public transit stop. Mr. Chan Park added that Uber improves safety by reducing the number of drunk drivers on the roads after public transportation shifts to little or no service at night. (In Thailand, for example, 26% of road deaths in Thailand are related to drunk driving.)

**Future Action**

The transport firm’s latest product, uberPOOL, uses analytics to determine users’ traffic patterns to create a “carpool- on-demand” service. Chan said that while the service is less than a year old, users have taken to it and “globally, about 140,000 fewer kilometers have been driven in the last four- months.”

**1230-1250 hrs on 1st June 2016: 6lowPAN – the Ideal Protocol for IoT**

Mr Lawrence Hughes, Co-Chair, IPv6 Forum (Singapore Chapter)

**Proceedings**

Mr. Lawrence Hughes started his second session by putting forward the diffrentiating features of Ipv6 and 6LoWPAN thereby bulidng upon the points discussed on day 1. It’s competition with Zigbee was put to study and discussed extrensively.

6loWPAN is a reduced capability (and address length) derivative of IPv6 specifically for very low end devices with small footprint. It is a competitor to Zigbee.

Zigbee specifies both the protocol and the wireless scheme, while 6loWPAN will work over any Internet datalink technology (Wi-Fi, Bluetooth, Ethernet, etc.). It is also easier to gateway a 6loWPAN subnet to IPv6 than it is to gateway other protocols. It is the protocol that IETF recommends for IoT applications.

The main focus of the IETF working group, 6LoWPAN WG, was to optimize the transmission of IPv6 packets over low-power and lossy networks (LLNs) such as IEEE 802.15.4 and led to the publication of RFC 6282 specifying:

* **Header compression**
* Throughout the 6LoWPAN adaptation layer, the key concept is to use stateless or shared-context compression to elide header fields.
* It is possible to compress header fields since they often carry common values. Common values occur due to frequent use of a subset of IPv6 functionality, namely UDP, TCP and ICMP.
* **Fragmentation and reassembly**
* **Stateless auto configuration**

Auto configuration is the autonomous generation of a device’s IPv6 address. The process is essentially different between IPv4 and IPv6. In IPv6 it allows a device to automatically generate its IPv6 address without any outside interaction with a DHCP server or such.

**1400-1770 hrs on 1st June 2016: India Connect – Supported by CMAI and Singapore Business Federation**

**Proceedings**

In sync with India’s implementation of the 5 Ambitious Digital Initiatives that include “Make in India”, “Digital India” and a plan to create 100 smart cities, India Connect was an event organized by CMAI along with Singapore Exhibition Services. The purpose of the event was to highlight India’s potential as being one of the most reliable places to invest and promoting the ‘Make in India’ initiative. The event included 3 speakers from both the Government and Private sector which highlighted different areas of the IT sector that ranged from drafting of policies to their successful implementation.

The speakers were:

1. **Mr.** **Gautam Balakrishnan**,Vice President & Head – Smart Cities, **TATA Projects**
2. **Mr. S K Marwaha**, Director – Department of Electronics, **Ministry of Communications & IT, Government of India**
3. **Mr. Ashwin Jaiswal**, Head – IT Business Consulting & Practice, **Reliance Communications**

**1400-1430 hrs on 1st June 2016: India Connect – Impact and Opportunities for Smart Cities Mission**

**Proceedings**

The session began by Mr. Gautam highlighting the current state of the smart cities initiative in India and the challenges faced by it. The role of ‘Citizen Partnership’ out of all other factors has been chosen as the most influential factor for the success of this initiative. Example of the Central Government’s role as holding the states responsible was explained, so as to why their state should be selected under the smart cities initiative.

Tata’s proposed method for tendering the smart cities project: The Swiss Challenge method.

Putting light on the crux of the building of smart cities worldwide, a basic level of physical infrastructure, something which is still not present in India, Mr. Balakrishnan emphasized the fact that India’s approach to building smart cities has be different. There is a need to adopt an approach that leap frogs certain stages of development and is specific to India’s need.

Types of smart city projects in India:

1. Smart Hubs: Theme based projects that have smart elements to themselves.
2. Brownfield: These are existing cities that are made smart by technological intervention.
3. Greenfield: These are new large cities that are built from scratch. Eg. Palav and Wave smart cities

Mr. Gautam on behalf of Tata, proposed setting up of smart campuses, like the Infosys campus in Mysore and integrate them into a smart city at a later stage.

Features of an Indian Smart City:

1. E-Governance
2. Waste Management
3. Water Mangement
4. Energy Management
5. Urban Mobility
6. Social Smart Infrastructure

Every city has been asked to develop its own properties – fully democratic process.

Business Models proposed by the Government of India:

1. Build Own Operate (BOO)
2. Build Operate Transfer (BOT)
3. Build Operate Manage (BOM)
4. Open Business Model (OBM)

Mr. Balakrishnan ended his address by putting forward Tata’s viewpoint that advocates a modular approach in implementing the smart cities initiative in order to bring in the desired flexibility, i.e. to have a common service delivery platform followed by applications and then services.

**1430-1445 hrs on 1st June 2016: India Connect – ‘Make in India’: A Program Strengthening Electronics and IT Manufacturing Industries**

Mr. SK Marwaha, the second speaker for the day began his presentation by briefing about the recent achievements and the four transformative pillars of the Make in India campaign. Following that, the electronics demand and future trends were discussed for the year 2020 and Government of India’s ambitious target of achieving NET Zero imports by the year 2020 was highlighted and discussed extensively.

The second half of the presentation talked about the conducive policy environment which included:

1. Key Government Initiatives & Schemes
2. Modified Special Incentive Package Scheme (M-SIPS)
3. Electronics Manufacturing Clusters and their status
4. Investment Allowance
5. Preferential Market Access (PMA)
6. Mandating safety standards and Human Resource Development

He concluded his presentation by discussing the opportunities in India in the domain of Smart Cities, IoT, mobile handsets, tablets, Set Top Boxes (STBs), LEDs, medical electronics, defence and Customer Premises Equipment.

**1500-1520 hrs on 1st June 2016: Hong Kong’s smart city initiatives: challenges and progress so far.**

Charles Mok, legislative counselor for IT, Hong Kong

**Proceedings**

As the government starts to take serious steps in developing Hong Kong into a smart city, leaders in both the government and private sector must change their mindset to enable the quick execution of various initiatives being laid out for the city’s smart city journey.

Addressing the audience at the IoT theatre, Mr. Charles Mok emphasized on constructing a competitive Smart City in Hong Kong. With the availability of all technology and man power to carry out the task Mr. Mok said it is about cultural change, that must cut across all levels of sectors both private and public to encourage the risk-taking essential to advancing Hong Kong’s smart city ambition.

**Government Action**

Hong Kong’s transformation into a smart city has become a major focus recently, starting with its inclusion in the Chief Executive’s Policy Address in 2015 and 2016. The urban regeneration **of Kowloon East, Hong Kong’s pilot smart city scheme,** has been ongoing for more than a year now.

In the past few months, two government consultations have been held – both of them related to smart city development. An Electronic Road Pricing Pilot Scheme – which hopes to emulate similar schemes like Singapore’s GNSS and Taiwan’s UHF RFID model – and a public consultation on the new franchise for the Kowloon Motor Bus network.

Recently, the Hong Kong government appointed professional services firm **Arup** as the lead consultant to support the former’s vision of developing the territory into a smart and sustainable city. Arup will work with networking vendor Ericsson on an 18-month feasibility study into the government’s smart city plans.

**Stalls visited**

**EQUATEL**, an Israeli company demonstrated two solutions for catering to the rural areas. The first one showcases ruggedized solar powered public payphone which can give voice and data connectivity to the user inserting his sim card in the system. The other solution is a terminal for providing remote health care which has sensors for monitoring blood pressure, temperature, ECG and a powerful in-built camera for projecting problems in body part to a doctor sitting in a town. At the back end is a cloud based Health Management System. Both the solutions can work upto a distance of 35 kms from the nearest Base Station.

**Huawei** demonstrated Virtual Reality and also debuted Cloud Communication, an end-to-end communications solution for operators to implement network evolution, service innovation, and business model transformation using the cloud.

**Verimatrix Inc.** specializes in securing and enhancing revenue for multi-network/multi-screen digital TV services around the globe. It provides revenue security for connected video devices; Verimatrix Video Content Authority System (VCAS) for broadcast hybrid, which provides multi-screen/IP transition for cable TV; and a single source for rights management across RF linear, multicast linear, and streamed on-demand content.

The visit was very fruitful in enabling me to become aware of the latest technology trends in the area of telecommunications and the associated product and services developments, especially IoT. It also enabled me to establish a number of useful contacts.

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