Hong Kong: A bridge to the future

by Stephen Ho, CEO, CITIC Telecom CPC

Hong Kong, with its advanced ICT infrastructure, and existing "smart objects" such as cashless payment systems, and digital ID card, is the perfect environment for an explosion of IoT. In the context of narrowing the Digital Divide, IoT can greatly contribute to upgrading quality of life for all residents, while empowering everyone with greater ease of information access and usability.

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Recognized as APCSC's "CEO of the Year," Mr. Ho's excellence in leadership is founded upon his more than 30 years of extensive industry experience, which spans a wealth of business aspects, including the marketing and sales of telecommunications products and services, logistics and strategic purchasing management, operations and technical management.

Prior to joining CITIC Telecom CPC in 2002, Mr. Ho held senior positions at Cable and Wireless Systems Limited, Honking Telecom CSL Limited, and Hong Kong Telecom Limited. He is also a founder of Internet data centers iAdvantage (1999) and Sky Datamann (2000).

During his impressive career, Mr. Ho was the project leader for numerous mission-critical telecommunications projects on public transportation in both Hong Kong and Taiwan, including the Honking Telecom engineering support unit at the Hong Kong Kai Tak International Airport and other Hong Kong Government facilities. He also led Honking Telecom's regional market development in mainland China, Taiwan, Singapore, Korea and Japan in the early 1990s.

In January 2012, Mr. Ho was elected by the Board of Governors of the US Pacific Telecommunications Council (PTC) to serve as the organization's Vice-Chair and voted as President & Chair in 2014. He also serves as a Chairman for the Communications Association of HK (CAHK) and is a Founding Member of the Hong Kong DigiCreate Alliance.

Mr. Ho holds an Honor Bachelor Degree in Electrical Engineering specializing in digital communications from McGill University in Canada.

The world has recently seen varying levels of unrest, due in large part to social inequalities. In Europe, North America, and Asia, inequalities have led to economic disparity, creating public discontent. It is evident that long-term, sustainable social stability depends on reducing, or eliminating, social inequality. Perhaps we can look to the "Digital Divide" to understand the situation and the solution.

Today, digital literacy and access directly impact employment and economic viability. The term "Digital Divide" describes the gap between modern haves and have-nots, demarcated by affordability and accessibility of Information and Communications Technology (ICT). This means access to tools such as computers and smart-devices, and Internet connectivity, also means possessing skills and awareness necessary to utilize these resources.

Even in 2014, billions of people still cannot afford broadband. From the Foreword of its "Measuring the Information Society Report 2014," the International Telecommunication Union (ITU) states:

> 4.3 billion people are still not online, and 90 per cent of them live in the developing world. Fixed-broadband penetration stands at 6 per cent in developing countries, compared with 27.5 per cent in developed countries, and growth rates are slowing.
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> — ITU, Measuring the Information Society Report 2014, Foreword

While it is important to raise living standards in developing countries, the digital divide occurs even in developed, urbanized places, including Hong Kong. The ITU notes that ICT access can have significant impact on "poverty reduction and health improvement," [Ibid.] precisely the areas to be tackled for eliminating social disparity, and therefore the source of discontent and unrest. Even modernized cities can be held back from continued development by underperforming population segments.

Adequate ICT access is more than simply giving every resident an email account and Web browser. With sufficient skills and ICT resources, residents gain more civic mindedness, health awareness, job opportunities, and generally the knowledge to improve livelihoods and, collectively, their society's quality of life.

But achieving widespread digital literacy, and equality of access, demands a broad scale vision and cooperation between many essential entities, including government bodies (setting the legal foundations and economic incentives for ICT growth), academia (helping

to both educate society and develop new technologies), private enterprises (especially within the ICT industry), NGOs, and last but not least the active participation of individual members of society.

Yet, is there more than just theory to this noble cause? Can we have a clearer glimpse of the "return on investment" in eliminating the digital divide?

Perhaps the city of Hong Kong is in a unique position to provide exactly such a view, and offer a more tangible taste of this vision. Hong Kong is possibly the world's most advanced ICT-enabled city. While many other cities also have high broadband and mobile penetration, Hong Kong may be the only one with a high enough density of digital urban applications that are in actual use today, to justify being called a "Smart City." As a result, Hong Kong can uniquely serve as a template, the prototype for all future smart cities.

A 21st Century vision

Hong Kong's government has been embarking on its "Digital 21 Strategy" to drive innovation and adoption of policies, technologies, and practices, toward the "smart city" concept, with its banner slogan "Smarter Hong Kong, Smarter Living." Hong Kong residents already enjoy many instances of "smart city" technology, such as the many government Websites (including mobile versions) offering a wide range of online public services, broad coverage of free Wi-Fi access points across the city, the Octopus electronic cash card used for almost all public transport and in many retail locations, a smart personal identity card (with encoded fingerprint and personal information all residents can leverage for efficient immigration processing), and expanding use of digitized "e-health" records. Since its initial conception in 1998, the Digital 21 Strategy[1] has been persistently building up Hong Kong's ICT pervasiveness year after year, and now aims to catapult the city to the global forefront as a Smart City of the future. This latest "upgrade" of the city's ICT plan will involve many of the recent innovations, such as wireless connectivity, cloud computing, "Big Data" and the concept colloquially known as the "Internet of Things."

The "Internet of Things" (or IOT) describes the growing opportunity of vast automation on the Internet via connected objects, instead of connected people. With more pervasive and miniaturized embedded technologies, everyday objects can become "smarter" and have the capability of "talking" to other objects without human intervention. The promise of this idea is immense, and there are estimates that by 2020 over 50 billion such objects will be online[2], including home appliances, furniture, vehicles, and wearable computing devices. Hong Kong already processes some 70,000 RFID baggage tags at its international airport, the largest scale of such a process in the world[3].

Upgrading the quality of life

Hong Kong, with its advanced ICT infrastructure, and existing "smart objects" such as cashless payment systems, and digital ID card, is the perfect environment for an explosion of IoT. In the context of narrowing the Digital Divide, IoT can greatly contribute to upgrading quality of life for all residents, while empowering everyone with greater ease of information access and usability. For example, for households with tight budgets, a significant percentage of household income goes toward two of the most energy-intensive activities: heating and lighting. IoT-enabled heating and lighting systems can significantly improve energy efficiency, with smart thermostats that manage heating (or cooling) and smart lighting that turns off illumination when nobody is in a room. Just energy savings alone can free up household income to be allocated to other areas, such as education or healthcare.

Speaking of healthcare, the fitness of a city's residents directly impacts the population's wellbeing and productivity. Wearable computing can help monitor vital signs of residents, and provide them (and their medical professionals) with early warning for certain health conditions, or to generally help residents maintain a healthy lifestyle. As part of a preventative regimen, such IOT-enabled devices can help not only households to avoid costly medical expenses at a later date, but also the time and money incurred by the city's health services. The cost savings in this area can again be allocated to better use, similar to the energy savings scenario.

Automated energy efficiency and health improvement are merely two examples, out of countless others, that can uplift the quality of life for residents of a Smart City, such as the one Hong Kong is transforming into. Because Hong Kong is already well-positioned with the range of enabling technologies that IoT depends upon (e.g., extensive wireless broadband, RFID enablement, cloud data storage and computing hubs, and others), Hong Kong is likely the world's most suitable pioneer to turn this futuristic vision into reality.

Empowering economic opportunity

As mentioned, bridging the Digital Divide requires the cooperation of many participants, including public and private sectors, and individual residents. Hong Kong already benefits from its large proportion of Internet-savvy members of society, who are well equipped to leverage Smart City resources, and can help raise awareness and educate their peers. The Internet has already brought new opportunities to segments of society otherwise unable to tap the potential of a connected world. Small-scale import and export websites now match local sellers with international buyers. Likewise, to bring about wider economic opportunities, advanced ICT offerings, such as enterprise cloud infrastructure and Software as a Service (SaaS), empower smaller scale businesses to compete with more established companies. New Desktop as a Service offerings level the playing field even further, freeing up small companies and people from expensive ICT overhead, and innovative network security solutions help protect business and personal interests.

Deploying best practices worldwide

While Hong Kong, as a test-bed for many IoT initiatives, is a modern city, learnings from their usage can apply to other areas, including developing countries. Boosting "Knowledge Sharing" with handheld devices can work in both developed and developing locations. E-readers and tablets can save the high costs of printing and delivering paper textbooks, and information can be instantly updated. Students and trainees can even share devices, and share insights, while acquiring digital literary skills. Devices can be made affordable through "One Laptop Per Child" and similar projects[4]. The WaterBee smart irrigation device can help both urban golfers and rural farmers[5] and Segway inventor Dean Kamen has even made a low-energy water purification device perfect for modern pollution or underdeveloped infrastructure[6].

As high technology and connectivity continue to expand across the planet, we can see the potential of narrowing the Digital Divide between segments of society, and even the gap between developed and developing locations. By intelligently using powerful, innovative, connected technologies in the ways most relevant to local residents, whether in developed or developing places, we can help ensure that a Smart City of the future, with equal access and equal opportunity, can be built upon not merely an Internet of Things but an Internet of the People. ●

[1] *http://www.digital21.gov.hk/eng/*
[2] *http://share.cisco.com/internet-of-things.html*
[3] *http://www.news.gov.hk/en/record/html/2014/04/20140416_172332.shtml*
[4] *http://laptop.org/en/*
[5] *http://waterbee.iris.cat*
[6] *http://www.slingshotdoc.com*