PUBLIC SECTOR CIO CONVEX 2017

DIGITAL TRANSFORMATION :
FORGING PUBLIC SECTOR DIGITAL FUTURE

5 to 6 October 2017
Dewan Seri Siantan,
Kompleks Perbadanan Putrajaya

PSC 2017

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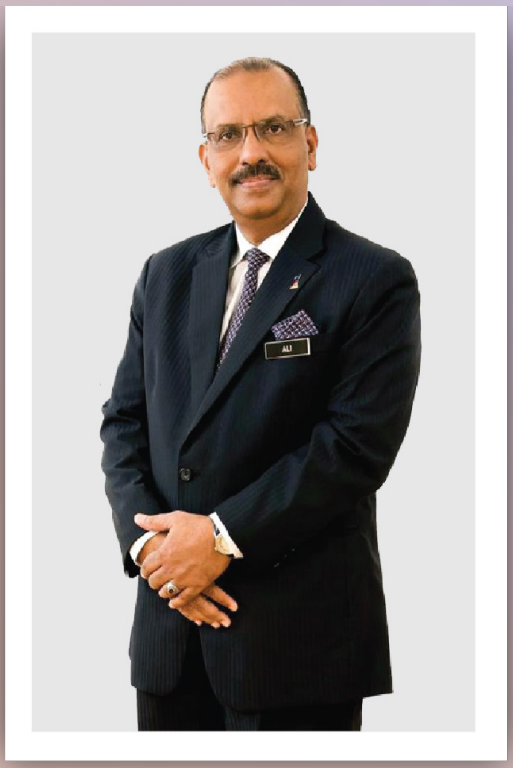
Let us all be grateful that with the grace of Allah SWT, we are able to gather here this afternoon at the Public Sector CIO CONVEX 2017. I am indeed very pleased that this convention could again be held this year, in promoting the government's digital transformation initiatives.

While the world has moved very quickly, governments have struggled to keep pace. And delivering on the 'customer promise' remains as much of a challenge now, as it was a decade ago. Not only have expectations raised exponentially with rapid developments in new technology, the resources in public services have also been stretched financially as well as in building up competencies. And the assumptions underlying apparently successful models of the past are now being challenged.



In 2012, I introduced the concept of "Merakyatkan Perkhidmatan Awam" or Humanising the Public Service, as a reminder of the need to restore the culture of people-centricity in the public service. The essence of this, is to put priority on the people, and that we as public servants being a part of the citizenry, must provide the best service to the "rakyat". This is because when governments deliver services based on the needs of the people they serve; it will certainly increase public satisfaction and build trust between government and citizen.

The major challenges for the government are in understanding citizens' changing needs, as well as the obstacles they face in attaining those services. Typical government institutions are very likely to do the thinking on-behalf of the citizens, yet aligning it with their static vision, missions and client charters. As a result, what is being delivered, is not what is expected by the citizens. Hence, investments made will not be bringing value for money. Getting engagement from citizens is something crucial, highlighted as one of the five (5) themes in United Nations E-Government Development Index (UN-EGDI). It is called e-Participation, where citizens should be informed of, and be involved in various government decisions. Apart from the conventional way such as doing a survey, technologies in the form of Internet of Things (IoT) and Big Data Analytics (BDA), could play a big role to assist government in building 'customer insight' especially in areas which matter most, ranging from business, education, health to social welfare.

Since 2009, Malaysia as a country is one of the big practitioners of Blue Ocean Strategy; with more than 100 initiatives involving over 80 government agencies that shifted from Red Ocean into Blue Ocean. One of the lessons which we could learn from is pulling down the silo walls to create a connected government; typically, agencies with bigger budgets will have more ICT assets and initiatives, but with this move, resources such as hardware, software, connectivity and expertise within government and particularly data could be shared for a common goal and outcome.

Studies have shown that two-thirds of e-Government projects are likely to fail, even though those projects passed the Technical User Acceptance Test (UAT) and made to go-live. Real success is only achieved when the project's imperative meets its objectives and citizens benefit from using it. Countries investing in capacity building are those who record high success rate and are able to deliver results; training and upskilling should be done at various levels both in technical support and operations, in ensuring end-to-end delivery performance. Indicators such as user satisfactions and cost per transaction should be continuously monitored and benchmarked, to improve services from time to time.

ICT projects are found in need for huge amount of investments, and unlike physical projects, most ICT projects are intangible. The tricky part is that, stakeholders are only able to see and use the system, once the system is completed, and this is usually after years of development phases. It will be very unfortunate if the user requirement process was not done extensively, as this may lead to a similar system to be procured in replacing the existing system, which will again incur huge amount of investments for the similar function. In addressing this, Agile methodology using Sprint and Scrum framework should be chosen so that projects could be broken down into micro services, and be able to be tested as modular basis, within a short span of time. When there is a need for updates or enhancements, that particular module could be attended to specifically, instead of changing the whole system.

All these key transformational digital initiatives are bearing fruit that citizens at every level can benefit. I cannot stress enough on how important it is to have an inclusive citizen-centric digital government. To all the CIOs who are present today, it is my hope that with the knowledge that you will gain from this convention, you will implement them to the best of your capacity to lead transformation within your own agencies. CIOs of each respective agency must be proactive and constantly look out for potential digital initiatives that will benefit your agencies. It is extremely crucial to be ahead of time. This is no longer an era where we can afford to be reactive and ignorant because it is now possible to obtain knowledge at our fingertips anytime, anywhere. CIOs are also instrumental in determining the strategic direction of ICT development in the agencies. In fact, you have the responsibility to harmonise the roles of IT professionals and non-IT professionals to build an effective working relationship. As the saying goes, charity begins at home. When each of us plays our part well, trust me, the butterfly effect is immeasurable.

Government and public sector organisations world-wide are required to adjust to the new reality of 'doing more for less' and focus on the outcomes society needs and wants. We must also decide if we want to consume the legacy left behind by predecessors, or innovate a new legacy for the next generation.

Last but not least, I must commend MAMPU, on its continuous effort in leading digital transformation. I believe this

convention will spark innovative thoughts and new ideas for us to leap forward. I hereby also express my gratitude to all the CIOs from each ministry and agency, for your constant support of the government's initiatives.

On that note, I hereby declare the Public Sector CIO CONVEX 2017 open.

Thank you!

YBHG. TAN SRI DR. ALI HAMSA, CHIEF SECRETARY TO THE GOVERNMENT OF MALAYSIA

"Government and public sector organisations world-wide are required to adjust to the new reality of 'doing more for less' and focus on the outcomes society needs and wants. We must also decide if we want to consume the legacy left behind by predecessors, or innovate a new legacy for the next generation."

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2.0 INTRODUCTION

"DIGITAL TRANSFORMATION : FORGING PUBLIC SECTOR DIGITAL FUTURE"

Public Sector CIO CONVEX (PSCC) 2017 is a platform for government agencies' CIOs, strategic partners from industries as well as local and international experts to come together to explore digital transformation. This conference was held from 5 to 6 October 2017 at Dewan Seri Siantan, Kompleks Perbadanan Putrajaya. The conference was officiated by the Chief Secretary to The Government of Malaysia, Tan Sri Dr. Ali Hamsa with more than 1000 invited guests and participants present from the government sector, the academia and The Malaysian Administrative Modernisation and Management Planning Unit, Prime Minister's Department (MAMPU) strategic partners from the private sector.

MAMPU as the leading agency for ICT planning and development in the public sector, is responsible in ensuring that ICT enablement initiatives are aligned with the objective of the 11th Malaysia Plan, which focuses on enhancing efficiency and productivity of a citizen-centric public service. Hence, this conference is one of the networking platform for all to interact and exchange ideas on public service digitalisation in Malaysia.

01 Artificial Intelligence (AI)

02 Cyber Security

03 Data Analytics

04 Clouds

05 Blackchain Technology

06 Citizen Centric Design

PSCC 2017 KEY FOCUS AREAS

The theme of PSCC 2017 was "DIGITAL TRANSFORMATION: FORGING PUBLIC SECTOR DIGITAL FUTURE", The emphasis was for government agencies to explore digital technologies capabilities and Citizen Centric Design (CCD). PSCC 2017 will delve into Governments' Digital Transformation. It strived to explore digital technology's ability and possibility to fundamentally transform the way the public sector operates and delivers services to customers and offered strategies for government leaders to accelerate their progress. PSCC 2017 focused on six key areas namely Artificial Intelligence (AI), Cyber Security, Data Analytics, Clouds, Block chain Technology and Citizen Centric Design. PSCC 2017 also brought Cybersecurity to the forefront of government's agenda. As government agencies embrace technologies such as the Internet of Things, Big Data, Cloud, and Mobility, security must be more than an afterthought. In the digital era, the focus needs to shift from securing network perimeters to safeguarding data spread across systems, devices, and the cloud. The information and knowledge obtained from keynote presentations, sessions, panel discussions and exhibition are expected to trigger interest and excitement for a vibrant digital transformation of government agencies.

PSCC 2017 featured two (2) keynote presentations, seven (7) international presentations, eight (8) technology case studies, seven (7) panel discussions and a Great Debate session from thought leaders and global organisations as well as distinguished speakers from key local organisations. A digital carnival was held in conjunction with the PSCC 2017. The public, especially university and school students were invited to join the fun, with 31 exhibitors offering a variety of exciting gamifications and demonstrations.

Further information about the CIO CONVEX 2017 was published via CIO CONVEX Portal at http://cioconvex.mampu.gov.my and Mobile Apps:

3.0 OBJECTIVES

The main objectives of this conference were to spur digital transformation in delivering Digital Government Services; to provide a platform for sharing ideas and knowledge to the latest scenarios and ICT technology trends, to provide opportunities for collaboration between Government agencies, academia and the private sector at local and international levels; and to promote public sector ICT products as well as to recognize agencies' commitment and excellence in implementing Government ICT projects.

To manage the disruptive new technologies and to forge ahead with the government's digital transformation agenda, PSCC 2017 was organised as a platform for Chief Information Officers (CIO) of government agencies, strategic industry partners as well as local and international experts to explore the exciting possibilities of digital transformation. It is also a venue to update the CIOs, information and communication technology managers and industry partners on current and future digital trends and technologies to facilitate innovation in the government's delivery service. This conference is also in line with the 2016-2020 Public Sector ICT Strategic Plan, which aims to strengthen strategic collaborations among government agencies with local and international organisations.

Tan Sri Dr Ali Hamsa,
Chief Secretar y to the Government of Malaysia
(PSCC 2016, 22-23 November 2016)

"Digital government is the optimal use of electronic channels of communication and engagement by the government to improve citizen satisfaction in service delivery , enhance economic competitiveness, forge new levels of engagement and trust, and increase productivity of public services.
A digital government encompasses the full range of digitalisation – from the core digitalisation of public services to the digital infrastructure, governance and processes needed to deliver the new service paradigm."

Participants of Public Sector CIO CONVEX 2017

DAY 1
(5 OCTOBER 2017)

Keynote Address by Director General of MAMPU

4.0 PROGRAMMES

4.1 Keynote Address by Director General of MAMPU

Alhamdulillah with his permission we are able to gather in this event, Public Sector CIO CONVEX 2017. Indeed, today's event is a manifestation of all the success in promoting the agenda of communication.

Let me start this morning by placing a quote from *Imam Shafie*; "Knowledge is like water. If it does not move, it becomes dead and decayed." Implicit from these words is the fact that knowledge is not static, it evolves, changes and expresses a fresh and new discovery. Information technology is a key element in upholding the public service delivery system.

On behalf of Malaysian Administrative Modernisation and Management Planning Unit, MAMPU, Prime Minister's Department, I extend my gratitude to all participants for attending in this very significant occasion in facing the waves of digital era revolution. To international delegates, thank you for participating in this conference and a very warm '*Selamat Datang*' to all of you.

TRADITION OF KNOWLEDGE HERITAGE

Distinguished Guests, Ladies and Gentlemen,

The emergence of a civilisation makes humans interact with each other easily and effectively. The advancement of civilisation also creates a more creative and innovative human being. With it, there are invention and technology in certain fields according to the needs of the times. Trade interactions between civilisations with whom it has a positive impact on religion, economy and social.

The ancient Egyptian government (Pharaoh's Government) has succeeded in forming an empire that encompasses the Nubian region in southern Egypt until the areas located upstream of the Nile. The Egyptian civilisation's fame is also characterised by the creation of hieroglyphic characters that are the basis of writing until today. In fact, ancient Egyptian civilisation has been heavily influenced by the Nile that allows the area to be inhabited by humans. Even so, Greek historian Herodotus says, "Egypt is the gift of the Nile".

As the Nile which catalyses civilisation and human civilisation in ancient times, information technology can be implicated as a driving force for the wheel of human civilisation of today. Since the late 20th century, the function of the river as a medium of communication and trade has been overtaken by the speed of information and communication technology.

This is a change of way and method of human interaction and interaction without limitation of time and place. Hence, the objective of organising CONVEX 2017, one of which is to spread the transformation of digital government service delivery to all corners from the upstream to the downstream.

I truly believe that this year's conference with the theme "Digital Transformation: Forging Public Sector Digital Future" will inspire us to explore the transformative power of digital technology in shaping the public sector's digital landscape. I do sincerely hope that all of you will reap the benefits from this conference and thus, exemplify our commitment in transforming the public sector's digital future.

DIGITAL TRANSMISSION : A GLOBAL PERSPECTIVE

Distinguished Guests, Ladies and Gentlemen,

"By 2020, 30% of web browsing sessions will be done without a screen, hands and eyes, but through audio centric technology. By 2020 too, the Internet of Things (IoT) will increase data centre storage demand by less than 3%, and By 2022, IoT-enabled service models could save a trillion dollars a year in maintenance and service costs."

These are some of the new technological assumptions made by Gartner (2016) that today's leaders need to take into account, given that we are at the peak of Global Megatrends and digital revolutions. The advent of new technologies like Cloud Computing, Big Data, 3D Printing and Internet of Things has challenged us to rethink our approach on digital transformation. This transformation is taking place with such rapidity that the increasingly fantastic ideas promoted from these new technologies and trends are plausible, if not already a reality.

Similarly, as digital technology begins to penetrate the workforce, it requires a sweeping rethink of organisational

structures, influence, and control. McKinsey's 2016 report on "Organising the Future" deliberated on the challenging role of leaders, as the functions and processes that support the workforce are turning from "bedrock to quicksand". In fact, Mckinsey Global Institute estimated that approximately 45 percent of the activities employees perform today can be automated by adopting current technologies. Unquestionably, leaders need to find the best strategies to restabilise their workforce in years to come.

Foreseeing the potential disruptive nature of these changes, I strongly believe that the starting point of any public sector digital transformation is a clear understanding of the present and future scenarios, and getting it packaged around the citizen's needs.

ANCHORING DIGITAL TRANSFORMATION IN MALAYSIA'S PUBLIC SECTOR

Distinguished Guests, Ladies and Gentlemen,

Keeping up or to be ahead of current trends often means being bold and visionary, and Malaysia, in this regard, cannot afford to be left behind lest we become irrelevant and perish under the forces of digital disruption.

Realising this, the Malaysian Government via the 11th Malaysia Plan anchors its digital transformation in the public sector by implementing and funding citizen-centric digital projects and initiatives that enhances the efficiency of the public service delivery system. A total of 200 ICT projects amounting to RM1.99 billion will be implemented during the first rolling plan of the 11th Malaysia Plan (2016-2017) that will improve the availability, accessibility and usability of the 88.5% government services available online for the convenience of its citizens.

MAINSTREAMING AND ACHIEVING DIGITALISED GOVERNMENT: MAMPU'S ROLE AS A LEAD AGENCY

Ladies and Gentlemen,

As the lead agency asked to spearhead and oversee the implementation of ICT initiatives in the public sector, MAMPU launched the Malaysian Public Sector ICT Strategic Plan 2016-2020 last year. It is further supported by the Government Service Delivery Digitalisation Plan in an effort to mainstream and consolidate all efforts by the government through six strategic thrusts, 13 strategies and 29 programmes. These plans will definitely set the right trajectory to take the Malaysian public sector to greater heights by 2020.

ICT OPTIMISATION AND CONSOLIDATION AS ENABLERS TO PUBLIC SECTOR DIGITAL FUTURE

Fundamentally, the public sector digitalisation initiative is driven by this one guiding principle: ICT Optimisation and Consolidation.

From a business viewpoint such as IBM, ICT optimisation and consolidation is not confined to IT cost savings per se, but more on the process of creating a highly efficient and dynamic infrastructure to derive maximum business value from IT investments. PriceWaterhouseCoopers in its 2017 Review defined ICT consolidation as putting together the right set of capabilities needed to address the ever-growing customer demand for fully integrated digital services.

This means the consolidation of technology must work in tandem with human resource and governance strategies. In fact, the question of how to structure the ICT organisation has been a topic of heated debate for several decades, with the pendulum now swinging

back towards a centralised model. The Malaysian Government is undoubtedly in line with this, as the Cabinet recently decided to centralise the management and operations of public Sector ICT services.

RESHAPING MALAYSIA'S PUBLIC SECTOR ICT LANDSCAPE VIA ICT OPTIMISATION AND CONSOLIDATION

Now, ladies and gentlemen, allow me to draw your attention to Malaysia's public sector ICT landscape. At present, the total number of ICT personnel only constitutes 0.67% of the total Malaysian public sector workforce. This percentage is far below the benchmark of 10 to 15 percent in highly developed countries like the United States. On top of that, this small number of personnel is distributed across various ministries and departments at the federal and state levels.

This is why as mentioned earlier, MAMPU is undertaking a tactical approach of centralizing the management and operation of Malaysia's public sector ICT to optimise our ICT resources. This will be made possible through a) the reinforcement of MAMPU's role as a central agency to chart the strategic direction and lead the planning of ICT operations and management for the public sector; b) the appointment of the Head of ICT Services for the public sector who will be authorized to manage human resource matters relating to ICT personnel; and c) the strengthening of the CIO's role at the ministerial and departmental level who will report directly to the Government CIO in MAMPU. We truly hope that this strategy will transform the ICT landscape and thus, enabling the Malaysian public sector digital future.

Distinguished Guests, Ladies and Gentlemen,

To date, MAMPU has also consolidated and optimised its ICT projects via the implementation of the 1Gov*Net Network Services, Public Sector Data Centre (PDSA), 1Gov Unified Communication (1GovUC) and Digital Document Management System (DDMS). The strategies adopted in the implementation of these initiatives has successfully led to an estimated annual cost savings of up to RM800 million. In addition to cost optimisation, other initiatives such as the Public Sector Open Data which comprises 18 sets of data clusters, significantly deliver multiple benefits including enhanced transparency in government services, as well as creation of new business model and improved social welfare.

Moving on, allow me to elaborate on two major ICT consolidation initiatives that the Malaysian government is currently undertaking. One is the Government Online Services Gateway, or GOSG which will act as a single gateway for all Malaysian Government online services based on citizen centric life events. Employing a citizen centric design approach, the portal went live on 1st of May 2017. Ultimately, this initiative is on par with similar efforts being undertaken by leading e-Government countries, such as New Zealand's Lab+, which also incorporates life event and user centric elements to develop an integrated and consolidated government online services for its people. Both initiatives demonstrate the importance of life-event government services that are integrated and consolidated into a single gateway.

Another consolidation exercise undertaken by MAMPU that I would like to showcase is the Public Sector Data Centre (PDSA). Driven by the heightened need to provide centralised data centre services for government agencies, three data centres have been set up, encompassing 1,845 application systems for 162 public sector agencies. This initiative is indeed comparable to Australia's Canberra Data

Centre, which services and consolidated more than 40 federal departments and agencies as well as servicing the Australian Capital Territory government. This signifies that our ICT initiatives are on par, if not ahead of leading e-Government countries like Australia.

POSITIVE OUTCOME FROM ICT OPTIMISATION AND CONSOLIDATION

Distinguished Guests, Ladies and Gentlemen,

Even though there does not seem to be a "one size fits all" model, the ICT optimisation and consolidation model used in Malaysia is based on best practices adopted by countries with a highly developed e-Government like the United Kingdom, Singapore and South Korea. All of these countries have dedicated agencies with a strong governance structure and autonomous power to lead their government digitalisation initiatives.

Most importantly, our optimisation and consolidation model gives us the opportunity to re-equip our ICT personnel's skills and expertise, along with the overall improvement of ICT system security and quality. This complements our efforts to create a "Government-As-a-Platform" model and thus, improving the nation's overall position in the global ranking.

EMBARKING ON MALAYSIA'S DIGITAL GOVERNMENT INITIATIVES: THE WAY FORWARD

Ladies and Gentlemen,

It is essential that the journey towards digital transformation in Malaysia has to be a continuous one as it requires changes to processes and ICT systems as well as the citizen's mindset and legislative aspects. It is a long term commitment: a long distance marathon, not a short distance sprint. In fact, these changes are even more challenging to implement in the public sector as compared to the private sector, given the enormity of the scope and spread of the government machinery.

Therefore, it is imperative that we have plans and strategies in place, as what we have done with our 11th Malaysia Plan, the Malaysian Public Sector ICT Strategic Plan 2016-2020 and the Government Service Delivery Digitalisation Plan.

Let me leave you with these final thoughts on why it is important to transform towards a Digital Government:

- To continue being relevant, governments need to meet the citizens expectations through engagement and collaboration to provide new ways of delivering public services. Our citizens, especially Millennials, Generation X, Y, and Z, now expect services at their fingertips – anytime, anywhere 24 x 7.

- Secondly, businesses and services have perished because they failed to overcome digital disruption. Therefore, to ensure that governments remain relevant, a "digital first, citizen focused" policy is needed to compel government agencies to digitise their core services. At the same time, it should be citizen-centric, and provides 'end to end' services, with a standard user friendly interface so citizens continue to utilise them;

- And finally, digitalisation of services enables and encourages investment in new business areas, contributing towards the country's economy.

Having said that, we must remember that the most sophisticated and expensive technology alone will not work without

the people's participation. As Steve Jobs once said, "Technology is nothing. What's important is that you have a faith in people, that they're basically good and smart, and if you give them tools, they'll do wonderful things with them.".

Thus, it is our ardent hope that many of these efforts I have shared would bring about the results aspired in the national plans.

Last but not least, I take this opportunity to thank all panellists, distinguished guests and participants for joining us for the next two days and sharing your experience and knowledge with us. Thank you and enjoy the conference!

TECHNOLOGY CASE STUDY - 1

4.2 Digital Government Transformation

Digital Government: Accelerating the rate of progress and enabling the Smart Citizen:

a) The foundational role of technology in enabling a software-driven digital government;
b) Building a modern software factory for enabling governments to be 'built to change'; and
c) A Government case study: A Digital Transformation journey.

STEPHEN MILES
Chief Technology Officer Asia Pacific & Japan (APJ) CA Technologies

An aging workforce set to retire, governments around the globe are on a path to modernize. According to McKensey report 60% of government workforce is retiring in the next decade. Citizens have higher service expectations, better access to information, and greater awareness of their rights and expect greater accountability and transparency. The need to provide services to millennials who want to interact with government over the internet but do not prefer to stand in line. Governments also have to become more competitive providing infrastructure and services to attract their share of business investment.

According to McKinsey survey, 50% of citizens are demanding access to services on the weekends and evenings. Government modernisation must lead to transformation that is driven by:

a) Citizen awareness;
b) Changing demographics;
c) Budgetary constraints; and
d) Global competition for investment.

With immense economic pressure, Governments are spending more and being asked to do more with less for citizens. The opportunity for digital transformation is huge and Government must transform. Citizens are expecting quicker delivery and more individualisation of services in today's 'hi touch' society that values personal experience. Sustainability is no longer a 'nice to have', but a 'must have'. A video about the connectedness of citizens was presented. Agile government emphasising that redesign is about making government more agile moving from 'built to last' to 'built to change'. The way to deliver all of this is with a trusted digital relationship suite. "This is at the core of what the trusted digital relationship platform does. It connects all the various users: customers, partners, and employees to the data resources you need to share. Simply put, we connect users to resources". Illustrating a modern software factory he highlighted the following factors for consideration:

a) Continuous innovation;
b) Modern Architecture;
c) Ecosystem of value;
d) Dynamic Trust; and

e) Technology core.

A CA study of 1700 companies world-wide that tracking the progress of companies that embraced digital initiatives was also shared. This includes a survey on the impact of implementing user authentication based identity and access. It was reported that 91% increase in distribution, 87% increase customer retention, 50% saw increased growth."

4.3 Delivering Better Outcomes through Digital Government Innovations for Seamless Citizen Experiences

Governments are aiming to digitalise development and implementation of government strategies effectively and bring governments closer to citizens through open and innovative Government, or in other words Digital Government. This objective recognises that technology supporting Digital Government is not only a strategic driver for improving public sector efficiency, but also to create more open, transparent, innovative, participatory and trustworthy governments with speed. The ultimate goal for government is to better serve members of the public, improve their quality of life, and strengthen the economy. This can be achieved by:

a) Leveraging digital technologies such as virtualisation, cloud and security for more open, participatory and innovative government by employing omni channel service delivery platforms to increase service quality levels;

b) Adopting a digital-first mind-set lies at the heart of faster and better service delivery;

c) Analysing what citizens are saying on social media and other channels to develop strategies to improve performance, allocate resources and fund capital projects that will address community needs;

d) Rationalising and converting existing assets and services, connecting different ministries and agencies to analyse theirinteraction with members of the public and constantly improve this process; and

e) Exploring the changes needed in the relationships between the government and the public to establish successful interactions with quality services.

Moderator:
GERRIT W. BAHLMAN
Director of Information Technology Hong Kong Polytechnic University

Question 1: What Is Citizen-Centric Design (CCD)?

MR. KATHIRRASAN KUPUSAMY

Developing a Digital Government and citizen-friendly online services are not merely about applying the latest state-of-the-art technology you can get from the market but also to determine how the Government can deliver its services faster and more effeciently. Now the bar has been raised to another notch. With the emphasis on Citizen-Centric Design the focus is primarily on how the Government can bring the citizens on board and getting real time feedback on how these digitalised services are being designed and customised to cater to their unique individual needs.

PAUL GAGNON

CCD is about getting the pain point of the citizens. Previously, the citizens were never consulted and systems were designed according to the 'feel' of the developer. Now, the approach is to involve the citizens by asking what the suitable design is and what services they actually want?

ALLEN CHIN

As a System Engineer, it is about getting in their (the user's) shoes. It is about putting oneself as the citizen to go through the process by not neglecting any aspect before doing anything. By being in the citizen's shoes, it'll help to address their issues more effectively.

MUHAMMAD RAZIQ RAMESH ABDULLAH

At MIMOS, feedbacks from the citizens are gathered to find out what they really want and to improve quickly based on these feedbacks to ensure that what we are developing will meet their expectation when they enter the market.

Question 2: How Do You Design The Process?

ALLEN CHIN

Create case studies, project a number of scenarios and image on what the citizens go through and feel. Then, build the process along the scenarios and design it to support the case study.

Question 3: How do we design the process sensitive to what the citizens go through?

MR. KATHIRRASAN KUPUSAMY
Involves more parties in an exercise to study the citizen's behaviour. The outcome of this citizen's behaviour. The outcome of this exercise is to create more personalised services for the citizens. For example in Education, include students, teachers, lecturers, agencies and ministries to design the services.

PAUL GAGNON
Include citizens from different demographic categories to gain user experience. Study the gap, propose the 'to be', design and validate the process to get the first hand information from the citizen.

MUHAMMAD RAZIQ RAMESH ABDULLAH
The design has to be easy with seamless access that allows technology to produce user friendly applications.

Question 4: How do you decide which services to start with?

MR. KATHIRRASAN KUPUSAMY
Currently there are more than eleven thousand online services. According to a survey on social media, the most in-demand services are related to jobs and education. Therefore, services in these two areas should be given priority.

PAUL GAGNON
Put the data together from all agencies, simulate and decide the priority based on these simulations.

MUHAMMAD RAZIQ RAMESH ABDULLAH
Through careful planning and proritisation as developing a truly CCD compliant online system is not a one-time effort. We need to strategise and continously gauge where we are heading in the development process.

Question 5: What is the take away word from each panel on Citizen Centric design?

MR. KATHIRRASAN KUPUSAMY
We have gone far in this journey towards digitalisation. Putting in perspective, Citizen-Centric Design (CCD) is a useful methodology to help develop a truly citizen centric Government services. In other words, adopting a demand driven approach as opposed to supplying driven approach.

PAUL GAGNON
CCD is a tool that enable seamless integration to get to citizen centricity in services delivery. There are many design approach that can be adopted tailored towards the real needs of the clients.

ALLEN CHIN

Developers and digital service providers should embrace CCD as a paradigm shift. Similiar to reverse engineering, begin with the end in mind and then work backwards to complete the puzzle

MUHAMMAD RAZIQ RAMESH ABDULLAH

Most of the time, technology is seen as the enabler for things to move faster but as we move further into the era of digitalisation and end-to-end online services, we receive increasing demand for these services to be distinctive and tailor made for citizens. This objective can be achieved through the careful application of CCD.

CONCLUSION

In order for a Government to deliver public services with digital innovations, it has to provide a platform built on digital technologies, adopt digital mind-set, address community needs and establish connectivity among ministries/agencies and provide quality services. Above all, these efforts will become possible if the Government places the citizens at the heart of strategies.

INTERNATIONAL PRESENTATION 1

4.4 Going Forward: Tapping the Potential of Digitisation to Improve Service Delivery

Building a digital ecosystem and discussing how collaboration is key to delivering truly citizen-centric services:

a) Managing the challenges of legacy systems;
b) Addressing the challenges and opportunities in leveraging emerging technologies to innovate and delivery better services; and
c) Preparing for the future of digital services delivery.

MOHIT SAGAR
Group Managing Director and Shif Euden
Editor-in-Chief OpenGov Asia

Business as usual used to be good enough but nowadays good enough is dead. In a world where everything is connected, where everything is equally excellent and where performance is reaching perfection, there is only one space left to innovate in you, who are the central point right now in the raging tornado of change - fuelled by digitization, mobilization, augmentation, disintermediation and automation. Science fiction has become science fact where there exists self-driving car and computer that can learn and think. Hence, the way we work will never be the same and surely the skills we need will be dramatically different. Game losing or winning are now happening faster than before. How will you discover opportunities in the most transformation times in human history – are you driving change or are you being driven by it?

Disruption has become the new normal. With change, it is always gradually and then suddenly. Things really have stopped happening gradually. Change is exponential – everything that used to be dumb and disconnected are now wired and intelligent. Cars, cities, ports, farms and our bodies will be connected and communicate to each other.

These game changers are also combinatorial - they amplify each other and create the perfect storm. Quantum computing fuels big data, the internet of things fuels artificial intelligence and deep learnings fuels robotics. However, whatever that cannot be digitized or automated will become extremely valuable. Humans only traits such as creativity, imagination, intuition, emotions and ethics. Humans will be more important in the future because machine are very good at simulating, not at being. Robots and softwares will do some of our works - this will allow us to focus on things that cannot be automated.

To imagine change squared, we have to start engaging with what might be our future, not just what is. Immerse yourself in the immediate future 5 to 7 years from today. We need to go beyond data and technology to reach human insights and wisdom. Technology represents how change, human represents why. The future is about holistic business models. The opportunities is to be liquid, to be learnt just in time, not just in case, not single improvements but complete transformations, not individual systems but new ecosystems.

Humanity is where true and lasting value is created. We will engage, relate and buy things because of the experiences they provide and also their transformative power. The future doesn't just happen, the future gets happened. The new way to work is to embrace the technology, but not to become it. The future is in the technology, yet the bigger future lies in transcending it. Let us live and lead from now.

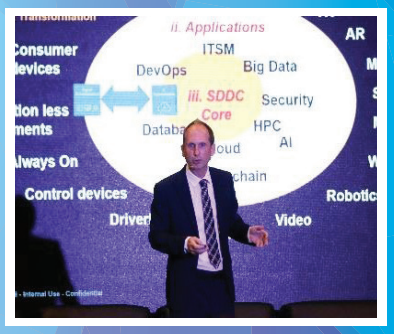
TECHNOLOGY CASE STUDY 2

4.5 Realise Your Digital Future: Creating a Digital City Foundation Without Building New Legacies Of Tomorrow

Technology innovation is advancing at an exponential rate, powering a new era of digital transformation. How do we realize the digital future with infrastructure expertise and solutions that span the entire IT ecosystem from the edge to the core to the cloud.

a) We're seeing organizations rethink their business models and disrupt entire industries; and

b) We're also seeing IT evolve from a support organization to a prime mover of the business itself yet, most IT leaders tell us their transformation initiatives are still emerging or evolving.



MARTIN YATES
Director of Strategy and Digital Transformation for Dell EMC - South East Asia and Emerging Markets
Dell EMC

The past three (3) decades showed rapid transformation of technology in our world. Currently we are in the Fourth Industrial Revolution that challenges us with: digital shared economy, digital life experience, digital government and smart nation centric. These challenges need to be tackled holistically and systematically to transform it into an opportunity. Digital cities the key factors in developing a digital city foundation is not to spend money on things that we do not need and security. Asian leaders committed billions to the journey of smart nation that it has become a national, economic and political agenda. Government of Singapore just launched Singapore's ICT Roadmap with smart cities as one of the components. Among the concerns in building a smart city are the design that need to integrate people with technology and again security.

Citizen-centric focus creates high expectation citizens that demand more from the government. The more we digitally evolve, the more demanding we become in comparing, competing and expecting greater experiences. Singapore which has the simplest form of government is still facing complaints from unhappy citizens. Therefore, we need to build trust in the community to convince people that the government had done its best and will continue to improve the nation using technology and other means. Jobs are changing dramatically, we need to fit in or we will be left out. Mid and low skill jobs will decrease gradually while new Industry 4.0 domain skills jobs will increase and promise better pay check.

Fast evolving technology distracts people where human could only focus less than 8 seconds; Human Attention Span Syndrome. Therefore, another challenge that we have to face is to design new and interesting things to keep people's attention. We need to make solutions and innovations that are beneficial for our community, but we need to address the security issues thoroughly in this digital era.

Digital architecture could be explained

extensively with Digital Egg as in Figure 1. The shell represents overall experience of the community while the core is data centre. The core needs to be in great shape in order to better serve the outer level. Our government policy must adapt to the coming changes in order to champion the digital transformation.

There are four (4) core focus areas of transformation harmony, namely; edge digital experience, user centric value (agile/open workplace), enabling core IT and trustworthy computing security. Digital challenges come with digital opportunities. One of them is work from home practice. It could reduce traffic jam and saves energy (petrol, electricity for offices etc.) thus be green. “Smart city is not smart unless you are thinking green in the design”. There are three (3) components in smart city’s green approach; green client environment, green physical environment and green data centre.

IoT fundamentally alters our view of how government services and business will operate in the future through devices and gateways. An important initiative is government services Business Lake as a service, where data could be shared among agencies to generate more meaningful value added services. However the issue is how to deliver that seamlessly without any prejudice or dispute over the data ownership.

Common application and deployment platform should be built to take advantage on the government services business lake as a service. The common application and deployment platform or analytic platform for example Predix helps agencies to develop and deploy applications easily in a short time. Pivotal is a software company under Dell that develops Predix. Predix had built a great foundation for many services and among the success stories are an airline company; where the operation cost is reduced to approximately $20M through de-ice improvement and smart lighting; which is a part of Smart San Diego. Again Mr. Yates stressed that the crucial key factor in developing a digital city foundation is security.

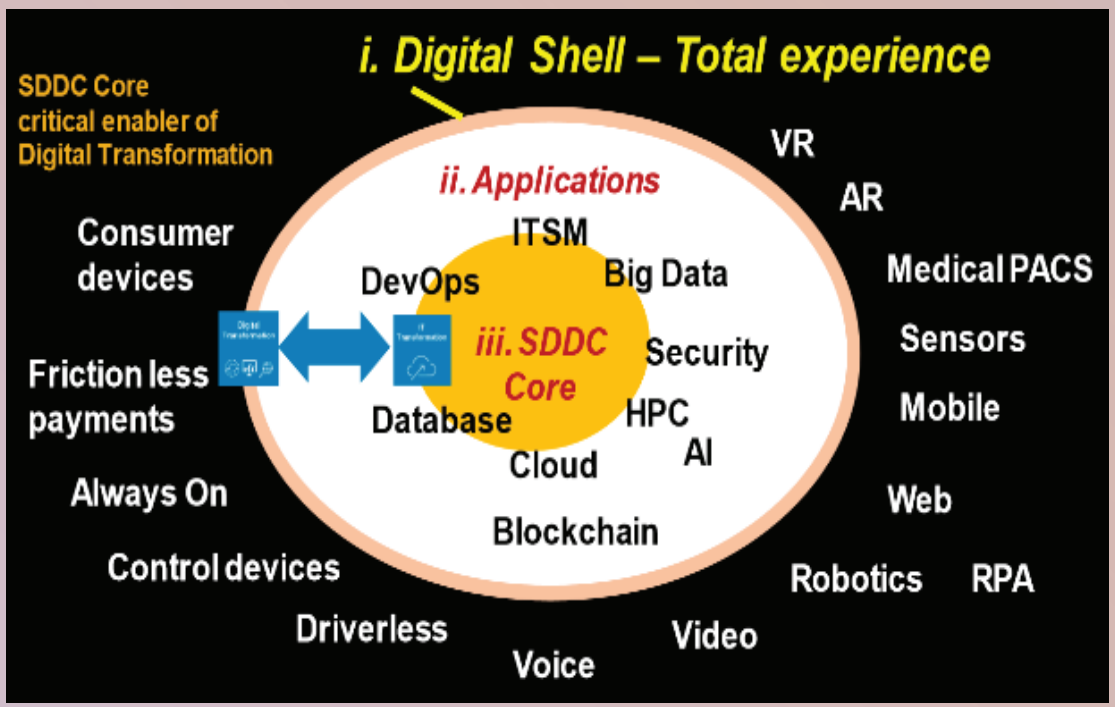


Figure 1: Digital Egg

PANEL DISCUSSION 2

4.6 Beyond Technology

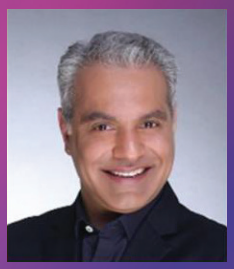
A Security Rethink for Public Services: Best Practices in Mitigating. Risks Re-imagining cyber resiliency as a key enabler that is aligned to business goals:

a) Combating the growing threat of online abuse – counterfeiting, brand impersonation and stolen web traffic;
b) Delving into the strategies, processes, technologies needed to reduce the reputational impact of incidence;
c) Exploring the increasing demand for cyber insurance policies within critical infrastructure sectors;
d) Understanding the importance of moving risk frameworks beyond technology to human behaviour and intent; and
e) Leveraging on the innovation of the cloud, as well as, protecting your data and users everywhere.

Panel Discussion 2 : Beyond Technology

Moderator:

MOHIT SAGAR
Group Managing Director & Editor-in Chief, OpenGov Asia



Question 1 : What is your take, what comes to your mind when you think of security?

IR. MD SHAH NURI
First, when we think about security, we think of technology. How to protect our systems, how to protect our information. People also present to be the weakest link to security including cyber security.

DATO' DR. HAJI AMIRUDIN BIN ABDUL WAHAB
Look at security beyond technology – processes, governance and policy. Security must be a central component in the government's digital initiative. It must not be an after thought but should be included at the design stage.

ALEX SIOW
It is about people, about governance. All security incidents are caused by people. We need to educate, we need to have governance to guide them in order for them to realise that whaever they do have risks.

ALEX LIM
Security is really our everyday life. It is no longer an insurance as it used to be. It is like a brake in the car. It doesn't stop but it actually helps us to run faster. It allows us to address impacts and allows citizens to enjoy the benefits of what we have.

Question 2 : Why do people use security as an excuse not to do things?

ALEX LIM
Best practices, governance and at the end of the day, it depends on the users.

Question 3 : Where does security starts and privacy comes in?

ALEX SIOW
A lot of security measures makes us difficult to move and to innovate. However, lack of security measures may cause loss of information or stolen intellectual property. People need to be aware of what they can do and what they cannot do. There has to be a balance between security and privacy.

Question 4 : Singapore disconnected 100,000 terminals. Is it a good move or is it a required move?

DATO' DR. HAJI AMIRUDIN BIN ABDUL WAHAB
It depends on the model, good or bad. It is too early to gauge. It is good to open in order to learn more. How can we learn about the attacks if we do not go to war. It is not that we want to be attacked. We know attacks happened every time but we need to get ourselves protected by putting the blockages. Whether it is good or bad depends on the country's strategy.

Question 5 : Should government create a barrier to access sensitive data to minimise human interference?

IR. MD SHAH NURI
With the current evolution of technology such as IoT and connectivity to mobile devices, there is a need to create barriers. These barriers are crucial to ensure faster and better performance by minimising human interference. Besides that, it is also equally important to educate and raise awareness on data protection among the users.

Question from the Floor : Earlier in the year, I watched an interview with Eric, CEO of Google and his response was, "If you have two-factor authentication and SSL (Secured Socket Layer), you are fine. And that we are making way too much under security. So as long as you have got HTTPS and two-factor authentication, you have covered yourself significantly."

ALEX LIM
Two -factor authenthication and SSL (Secured Socket Layer) are sufficient for the general public. However, bigger organisations may require more than these two to protect their sensitive data.

Question 6 : How to solve phishing emails? How do we solve phishing with two-factor authentication? You cannot solve phishing emails with two-factor authentication.

ALEX SIOW
Well, I think two-factor authentication will eliminate many phishing attacks but of course many more measures we can take on top of the two-factor authentication like ensuring we encrypt sensitive data and patch properly when we receive a patch. But all of us take it too easily and do it later.

Question from the floor (Mr. Gerard) : Do you think technology can overcome human stupidity?

DATO' DR. HAJI AMIRUDIN BIN ABDUL WAHAB

People tend to be the weakest link when it comes to cyber security. Even when the organisation is equipped with the latest technology, it is still susceptible to cyber attacks. For example, when people click on an unknown attachment or link. Therefore, cyber security must go beyond technology. This includes the people, governance and so on.

IR. MD SHAH NURI

In the future, there will possibly be more machine to machine connectivity and less human interferance. But still, towards the end, it is the human who decides. The social engineering attack by hackers according to a survey done, showed that 70% of how attackers get into the systems is through social engineering.

ALEX SIOW

Human intent is always the most important. For example, in the mail fraud cases where recipients were asked to pay using the link that was provided in the email. Some may fall victim of this fraud by clicking the link to make their payment. This is where technology comes in as a layer of protection by alerting when browsing suspicious or malicious site.

Question 7 : In the last seven to ten years, we have spent so much time talking about cyber security. Are we forgetting about physical security aspect of all these? Would drone technology where I can drop a payload outside your data centre or where you have all your things and where autonomous cars coming in with human intervention are not there, should physical security not come back to the forefront of security?

DATO' DR. HAJI AMIRUDIN BIN ABDUL WAHAB

If we look at the trend in the Industrial Revolution 4, it is convergence of physical security and cyber security. There is no such thing as cyber on one hand and physical on the other. In the context of IT, there is also the convergence of IT (Information Technology) and OT (Operational Security). By segregating, it is not the way forward. The idea that the same person being the CISO (Certified Information Security Officer), and also leads physical security.

CONCLUSION

The importance of cyber security are as equally important as physical security. Organisations must ensure that all of its staffs are aware of the needs to protect information and systems. Besides technology, process and governance, policy aspects must be included at designing stage. Convergence of physical security and cyber security are also becoming latest trend nowadays.

TECHNOLOGY CASE STUDY 3

4.7 Government Cyber Threat Landscape: Seeing What Others Don't

From the first time that criminal charges were filed against a known state actor for hacking in 2014 to the recent US Senate Intelligence Committee hearing on Russian influence on the 2016 US Election, we have been integral to investigations where cyber-attacks resulted in the most significant impact on governments around the world.

a) Highlighting some of the most public investigations;
b) Looking to key government leaders to understand their perspective on the impact of cyber attacks; and
c) Reviewing the top strategic mistakes that organizations make when trying to address cyber risk.

TAN ENG HAO
Regional Systems Engineer FireEye

Current State of Security Operation Challenge

In year 2016, FireEye has responded to more than 200,000 hours to help customers on incident response. This raises the questions of if there are Standard Operating Procedures (SOP) in place, and how far these organisations comply with their SOPs.

Based on Figure 2, 85% of the incident response occurred to the organisations that already have Managed Security Services Provider (MSSP) or Security Information and Event Management (SIEM). Most organisations took 99 days to discover a breach.

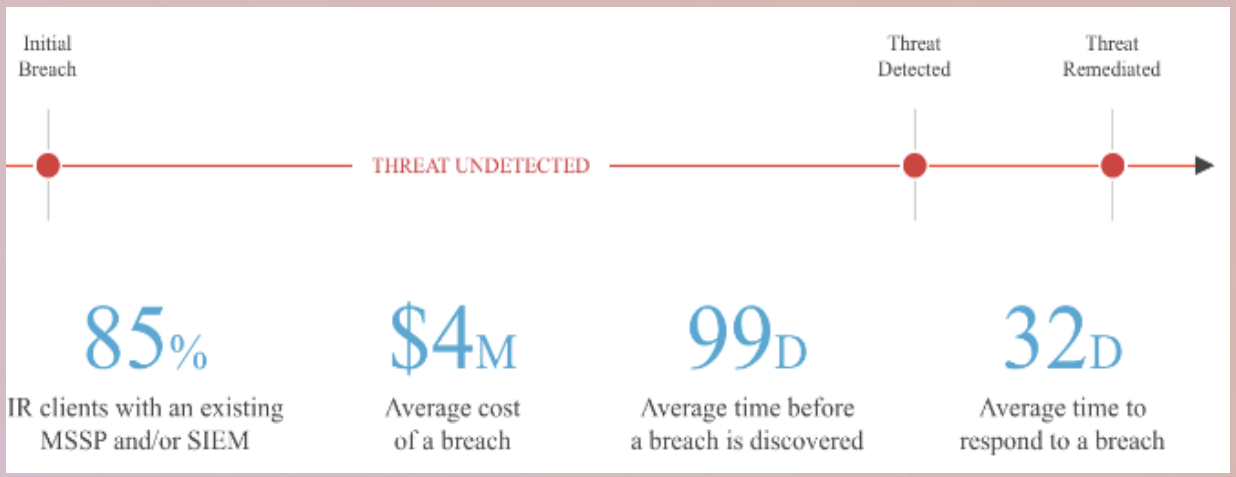


Figure 2 : Cyber Security Incident Detections and Response

Why Organisations Fail?

There are several factors contributing to the failure of cyber security protection:

a) Building higher walls continuously does not increase the security, i.e. multiple layer of firewalls;
b) Investing on technologies blindly, i.e. acquiring a firewall without knowing the detection method used (behaviour, signature, etc.);
c) Using compliance check boxes that do not comply to the business; and
d) Implementing manual processes and intensive labour increase cost to the organisation.

Explaining the Business Risk

Cyber security breach is inevitable. Organisations are required to understand the business risks, measure the value of their assets and identify risks as new attacks and zero-day exploits emerge every day.

Collaborative Response Plan

The government should initiate knowledge sharing on cyber security between the agencies and provide necessary cyber security trainings to develop a pool of talented people.

Increasing Visibility & Response Speed

To increase the readiness in managing cyber incidents, organizations are required to perform:

a) Cyber security exercise to test procedures and knowledge;
b) Cyber threat intelligence to anticipate possible cyber-attacks; and
c) Invest in automation and orchestration to improve cyber security detection and response.

INTERNATIONAL PRESENTATION 2

4.8 Co-creation of a Data-Driven Government Digital Solution: How Public Services of Catalonia Enhance Citizen Data

This case study illustrates how to develop a digital solution using co-creation methodologies. It shows how citizens participate in various innovative methodologies to develop a digital solution to manage citizens' information. The Open Administration of Catalonia Consortium (The Consorci AOC) developed a prototype as a multi-platform digital solution to provide useful information to social services users related to their procedures and welfare benefits.

a) Strengthening the relationship between citizens and public administration;
b) Enhancing institutional citizenship data by providing useful information to citizens, anticipating processes according to citizens' life events and providing some services proactively; and
c) Increasing transparency in relation to citizens' information managed by public administrations.

MIQUEL ESTAPE VALLS
Deputy Director
Strategy & Innovation Open Government of Catalonia
Spain Vice President Public
Management of Catalonia Association, Spain

It is the desire and aspiration of the Government of Catalonia to promote digital government transformation at various levels such as federal, state, university and public levels by providing e-government services.

How is this being done?

Through Citizen-centric Strategy. The government does this by starting projects and changing them dramatically.

What is Citizen-centric Strategy?

a) Proposing the real needs of the citizens;
b) Focusing on the frustration of the citizens; and
c) The techniques and methodology required to engage the citizens.

How to know citizen requirements?

a) Data science;
b) Behaviour analysis;
c) Workshop;
d) Challenges faced during online transactions;
e) Satisfaction surveys; and
f) User ideas.

However, understanding the requirements of the citizens can be daunting and too ambitious to follow through if we are not equipped with all the necessary tools.

What could be the ideal characteristic of services offered by the government?

a) Simple;
b) Cross cutting;
c) Personalized;
d) Proactive;

e) Omni channel facilities;
f) Trustworthy; and
g) Focused on life and events

What are the worries of the citizens?

a) What data does the government holds about me?;
b) What are the status of my procedures?;
c) What is the government doing with my personal data?; and
d) What can the government do for me?;

The key point is on how the government can be more proactive to the customers. This could be achieved by understanding the citizens' needs and by providing customized products/ services.

What are the processes involved in gathering citizen data?

a) Legal evaluation;
b) Data science analysis;
c) Research co-design;
d) Prototype; and
e) Validation with end users.

By identifying the architecture and pattern of the citizens, we can build a prototype. We should also estimate the needs of the citizens accurately. The government of Catalonia has little data about her citizens. Social economic needs should focus on social needs.

What are the benefits of data for citizens?

a) Empowerment and increased confidence;
b) Increased satisfaction;
c) Save time and cost; and
d) Less stress: as they are aware of the benefits that they are entitled to.

Citizens with social and economic needs go through a lot of stress. Benefit of data to the government.

a) The government wants to provide quality and valuable services to the public;
b) Better valuation of citizens;
c) Services provided to the citizens in need;
d) Save time and costs; and
e) Increased satisfaction of public employees.

What is the ultimate goal of the government?

a) Making life easier for the public; and
b) An effective and efficient government service delivery system.

PANEL DISCUSSION 3

4.9 Open Government

The transformational impact of an open, accountable, and transparent government on the public sector's productivity and citizen's experience.

a) The public benefit of open data;
b) Building large scale participation; and
c) Realizing the economic value from government data.

Panel Discussion 3 : Open Government

Moderator:
GERRIT W. BAHLMAN
Director of Information Technology Hong Kong Polytechnic University

Question 1 : Open data is in the form of shared data, how do you achieve effective open government with the security people?

GANESH KANAGARAJAH

There is a difference between open government and open/shared data.

MAARJA TOOTS

There will be suspicious outsiders who want to acquire the data. Therefore, data owners should acknowledge both the benefits and the threats of open data.

MIQUEL ESTAPE VALLS

We should have data protection regulation and in-depth analysis to manage the data. In Catalonia, many public authorities managed the data together. We have to be accountable for the risks involved when the data is made openly accessible.

PHILIP SOW

Personal data such as MyID should be restricted and following a set of terms and conditions.

Question 2 : How to develop security people in a global system?

MAARJA TOOTS

In Estonia there are access levels to the public data. A comprehensive approach along with its respective guidelines should be in place towards grooming security experts in the global system.

MIQUEL ESTAPE VALLS

In Catalonia, any problematic record will be removed from the data repository. There is a need to appoint the people who will be responsible to make decisions regarding the support processes related to open data. In the private sectors, they are data owners and business owners. While in government agencies, they control it centrally. They only have a single data repository to streamline the data flow. Although the data is open to the public, it is subjected to data protection regulation. Data is acquired directly from related agencies.

PHILIP SOW
Usage control and data licensing should be implemented. It is difficult to comply with data protection rules due to the challenges of managing and controlling the data. Identifying the data owners is one of the main challenges in data management. In the government sector, shared data is essential among the agencies. Developers can opt to use API for data sharing.

Question 3 : You made a distinction between data which is defined as public data and data which is not. What do you think about the data in your organisation? Do you have data which is of public value?

GANESH KANAGARAJAH
In regards to public value, health and safety data as well as environmental data have been made available for various government agencie

Question 4 : Who made the decision to support the release of data? Was it made by the agencies as the gate keeper of the data or was it made by the government?

GANESH KANAGARAJAH
In the private sector, there are data owners and business owners respectively. Whenever a request for data comes in, it will be directed to the data owner and will undergo a defined set of processes. There is also a governance committee that deliberates on what needs to be released, how it is to be released and what fall back procedures that need to be in place.

Question 5 : How do you do this? How do you govern? How do agencies work together? How do you overcome the silos?

MAARJA TOOTS
There is a distinction between open data and government data. An example of government data is the country's expenditure. Open data is highly preferred but we should take into considerations the cases that are restricted by regulations. We can overcome these restricted regulations by ensuring appropriate finalities and so on are being implemented. Based on a research that has been conducted, the governments that are the most successful in implementing open data combined different measures that includes legislations, software support, skills and guidelines. In short, it is a combination of comprehensive approaches and APIs.

PHILIP SOW
Data restriction is one of the main challenges of open data. When we leverage data, there are repercussions to the data owner's terms and conditions. Therefore, we need to be clear on what the data will be used for. It is essential that the data is being shared from a single source. In 2016, there was a government portal that encouraged developers to produce APIs to store all of the data. We need to organise trainings to develop a pool of people with the right skillsets.

Question from the floor (YBhg. Dato' Dr. Mazlan bin Yusof):

MAMPU has created a portal (data.gov.my) where it requested data from the ministries and agencies to be shared with the public. It was designed as a platform for the ministries and agencies to share data. It is about transforming the data and adding value to the data to solve problems. It is essential for the agencies to understand how these data can benefit their organization respectively. Some of the challenges that MAMPU is facing includes convincing the agencies to share their data, making them understand the importance of their data and also how these data can be analyzed to provide solutions to their existing problems. How can we manage these challenges?

There is a distinction between design thinking and engineering thinking. Design thinking recognizes that there is an improvement process. It recognizes that there are experiments. Engineering thinking results in people trying to build perfect solutions like a building. For example, an engineer builds a bridge equipped with safety designs so that it will not fall down. That is engineering thinking. Design thinking usually include a series of experiments which also includes risk taking. This is followed by a series of improvements. Designers may take risks, but engineers do not. One of the main issues faced by government agencies is the fear of risks. However, we can overcome this by setting an environment that encourages experiments, taking risks and learning from failures. Therefore we should focus on experimental design instead of engineering design when designing the processes related to data management.

GANESH KANAGARAJAH
In the past, data is often shared as statistics. Nowadays, the same data that is used to generate statistics can also be further analysed (analytics).

Question 6 : What can the audience take away from your experience?

MAARJA TOOTS
It is important to start from somewhere, take risks and learn from failures. Other stakeholders and governments to have citizen groups.

GANESH KANAGARAJAH
For Government 2.0, we need to link design with data.

PHILIP SOW
People need to move forward instead of keeping data in their own department. We should move towards centralized data platforms and analytics from data sources and understand how these data relate to their tasks.

CONCLUSION

Open data bring a lot of benefits to the Government. To ensure successful implementation of open data, data protection regulation and in-depth analysis to manage the datasets must be put in place. Other key areas that need to be considered include implementing data restrictions, equipping people with the right skill sets and encouraging better analysis with the data.

TECHNOLOGY CASE STUDY 4

4.10 Enabling the Data-Driven Government: Operating at the Speed of Citizens

a) The integral role of an open data ecosystem in enabling data-driven government;
b) How to move your data to and from the cloud into one well-woven, seamless, integrated entity; and
c) The importance for a secure, scalable and interoperable Internet of Things (IoT) data platform.

OON CHEW BOON
Technical Consultant Manager
NetApp Malaysia & Brunei

Data is created on the Internet every single second. NetApp is in the business of managing data. Kodak invented digital camera in 1975 but decided against introducing it to the market for fear of killing their analogue photographic films' business. It did not capitalise on their own technology and their competitors superseded them in digital technologies. Digital revolution or digital disruption is made possible by Internet. Figure 3 exhibits the revolutions in Digital Disruptions. Digital disruptions happened in three waves:

a) The Internet;

b) Mobile Internet which allows iPhones to sell music, Amazon sells books while Uber is a taxi service provider online without owning a single taxi. 180 billion mobile apps were downloaded in 2015 with massive terabytes of data being generated; and

c) Internet of Things (IoT). For example, wearables and fitness trackers allow for data-driven services. Collection of sensor data of jet engines is also made possible by IoT to monitor and optimise complex flight systems. For example, Rolls Royce in collaboration with Lufthansa was able to solve the problem of high fuel jet consumption using this method. 40% of all data will come from sensor data by 2020.

The Internet of Things (IoT) further complicates data management. How do

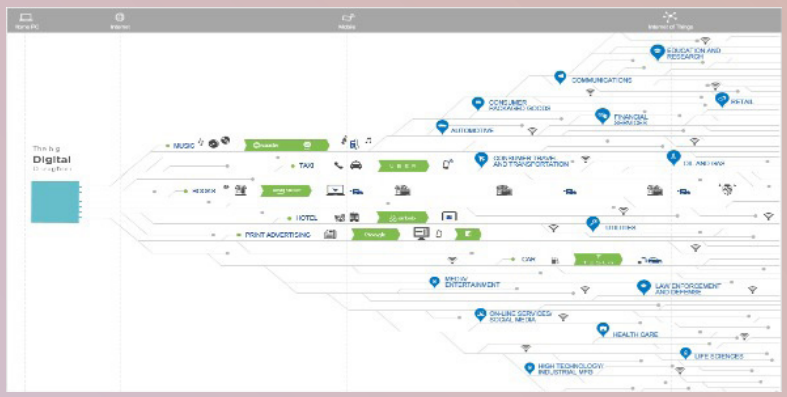


Figure 3 : Digital Disruption Revolution

we perform data mining to turn it into useful information?

Waze is also an example of IoT for real-time traffic information and navigation. In September 2017 when Hurricane Irma hit Florida, information reported by users of Waze went through data analytics to alert users of dangers and saved lives. Adopting secure, scalable and interoperable IoT data platforms should be considered by the government by weighing the risks and competitive advantages for the citizens and the country. NetApp provides cloud services with functionality, support high performance computers, data analytics and mobile strategies by securely partitioning data and allowing customers to manage their own data. It addresses the issue of how to manage data created on the Internet, transferring and storing data safely between data centres and clouds, run data analytics, cleansing data and churning out valuable information for the people and agencies.

For example, in order for the state of California to sustain its economic activities, it has to depend on Information Technology (IT) as a business enabler. IT is an effective tool for the government to allocate scarce resources effectively and efficiently. Collaborations cutting across 29 public departments are made possible by consolidating all data centres into a multi-tenanted private cloud computing. Before, these departments kept their data sets to themselves. The silos were costly and hindered dynamic data access. The backbone of information nowadays and in the future is cloud computing as it allows for shared services and consolidation of systems and information. Public agencies are able to provide timely, important and needed data/information to the citizens in a matter of minutes/hours. Engaging with NetApp allowed 97% of business processes to be virtual, reduce storage footprint by 30% while increasing storage capacity by 300%, cut CAPEX by 42% and OPEX by 35% and achieve a return on investment in 18 months. These costs savings were made possible through storage efficiency and scaling capacities. California's IT was faced with severe budget cuts but investing in NetApp allowed the state to do less with automation.

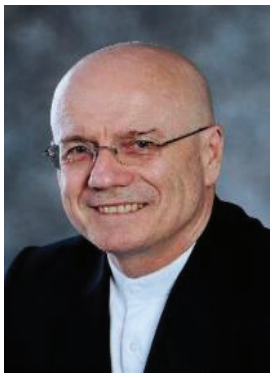
Open data ecosystem allows the government to move data to and from the cloud seamlessly producing integrated insights with integrity and optimizing processes. Thus, new business models (applications) and/or disruptive solutions can be introduced for the benefits of the citizens.

INTERNATIONAL PRESENTATION 3

4.11 Managing Transformation

Innovation is the new meme in our rapidly expanding digital world and workplace. With awareness of this brave new world comes the call for transformation. But not all transformations, especially those arising from attempts to embrace innovative ideas, come to fruition. Managing transformation in this context, necessarily becomes both an art and a science. This presentation builds on the speaker's personal experiences in leading the design development and delivery of a mobile, paperless curriculum to support a flipped classroom experience in a new medical school. Key focus areas :

a) The role of a guiding framework in supporting transformation;
b) Defining and applying 'six key peaks" deemed essential elements to achieving success; and
c) Knowing what to leave in and what to leave out along the journey, i.e., managing one's 'Principles' vs 'Preferences'.



PAUL CAGNON
Director
E-Learning/ IT Systems & Services
Lee Kong Chian School of Medicine, Singapore

The presentation entitled managing Transformation was given by Mr Paul Cagnon, Director, E-Learning/ IT Systems & Service, Lee Kong Chian (LKC) School of Medicine Singapore. The focal point of the presentation is how to create seamless integration between technology and pedagogy with the case study of Lee Kong Chian School of Medicine Singapore. The initial idea is to combine the idea of mobile technology and paperless solution to enhance the application delivery in LKC School of Medicine. To achieve the objective, the project team led by Mr Paul Cagnon introduced a new transformation approach known as 'A Six Peak Journey'. LKC School of Medicine uses various applications such as iFolio, ILAMS and ILKC Analytics to support their learning environment. However, through transformation, these applications are now integrated via one e-learning ecosystem known as LKCMedicine E-Learning Ecosystem. This e-learning solution can be accessed anywhere and anytime, and provide rich learning experience in the classroom. The students are encourage to study by themselves via own mobile devices and then come to class for further discussion and problem solving exercise.

This LKCMedicine E-Learning Ecosystem initiative is based on Technology Enabled Learning System Design Framework (TERASA), and consists of four main components namely, resources, support, activities and assessment. The implementation of TERASA initiative can be represented in 'A Six Peak Journey' as follows:

a) The Why Peak;
b) The Who Peak;
c) The Where Peak;
d) The How Peak;
e) The When Peak; and
f) The What Peak.

The transformation journey starts with 'The Why Peak', or known as 'Begins with Purpose Peak' phase. It requires the strong transformation of organisation and culture. In this phase, the organisation must be clear on the vision of the initiative and develops a strong strategy on how to achieve the vision. In addition, it also requires utmost support from the stakeholders especially from the CEO and CIO.

The second peak is 'The Who Peak' or 'Assemble the Team Phase'. This is the phase to identify the key players. The ideal key players must consist of those with leadership capabilities, the trail blazers, the builders as well as the users or customers. It is essential to include these key players in the team because they can influence the success of the transformation.

The third peak is 'The Where Peak', or 'Take Stock Phase'. In this phase, organisation need to know what they have now and what they need to do to achieve the vision. Basically in IT domain, this require the stock take of infrastructure and application. Then, the organisation needs to assess whether their action plan is viable enough to get them there. Only when all these questions are answered, the organisation can move to peak four.

The fourth peak is 'The How Peak' or 'Sell the Route Phase'. It is about how to sell the route of transformation. There are four processes in this peak, starting from know the culture, create feasible cases or routes, build confidence with the team and organisation, and finally build confidence with those buying into the climb. In brief, this is where the crucial part of the organisation transformation as it requires a holistic change management process in the organisation.

Following is the fifth peak, 'The When Peak'. It is also known as 'Establish Timeline Phase'. During this peak, the team must ensure all planned actions are executed on time as per scheduled. The project manager must be in control of the project and ensure a solid communication is established. This includes regular and positive communication, not only among team members but to the all stakeholders as well. In addition, the team also must always be ready and communicate the backup plan too.

The final peak is the 'The What Peak', or 'Make the Ascend Phase'. This is when the team rolled up the project, by mapping the terrain and learn from the experience, either it is a success or a failure. This also include making the existing strategy as a reference for the future. However, this also can be a phase to re-strategize the action plan. Then, milestones are set and ensure the progress is pace. Lastly, the team must always be ready with a backup plan for any unexpected challenge. Finally, when all the six peaks are reached, the team should celebrate the success as this will be the catalyst for the future project.

INTERNATIONAL PRESENTATION 4

4.12 Transforming Your IT Defence

Cyber Defence: Enhancing Data Security, Networks and Infrastructure Protection through Security Governance.

Due to the increasing complexity of cyber security, organisations have to beef up their cyber defence capabilities. This presentation discusses the challenges that organisations face in enhancing data security and infrastructure protection including network security.

a) Security governance is key to improving cyber security readiness; and

b) Identifying roles and responsibilities in cyber defence is first step towards a robust cyber defence practice.

ALEX SIOW
Chairman
School of IIT Advisory Committee
Temasek Polytechnic, Singapore Professor
National University of Singapore (NUS)
Director
Strategic Technology Management Institute NUS Computing

Security is everybody's business. Cyber threats on large organisations are increasing. These include theft of information, data leakage, brands, ransomware and so on. Cyber security is everybody's responsibility of the IT personnel. Cyber security is also a critical role in managing Information Security Governance.

Data threat includes the attempt to access files, to infiltrate or steal data. Based on a statistic that was conducted on cyber threats shows that 64% organizations suffered brand damage resulted from data breaches. And 85% of these organizations took months to recover. Therefore, Personal Data Protection policies has become an important issue. Organization should establish general data protection regulation in order to protect personal data that comply with GPI. It has become more challenging to guard against malicious attacks. The biggest attack nowadays is the "ransomware" and the biggest breach was the Equifack Breach that happened in the US. In order to protect from the attack, defensive measures must be in place. One of the safety mechanism is by using Two Factor Authentication (2FA). 2FA is a security process for user authentication through two methods, one of which is usually a password. Governance is the key to security defence. Security policy needs to be established to ensure compliance and for auditing purposes. To enhance security, management, administration & governance standards are available to assist organisations to implement the appropriate programs and controls to mitigate these risks such as BS7799/ISO 17799, Information Technology Infrastructure Library and COBIT. Information Security Governance or ISG, is a subset discipline of Corporate Governance that focuses on information security systems, their performance and risk management. There is a need to establish and maintain a framework to provide assurance that information security strategies are aligned with business objectives and consistent with applicable laws and regulations.

Security Managers should be equipped with Information Security Governance qualifications that is designed for Certified Information Security Managers (CISMs), Chief Information Security Officers (CISOs) and Information Security Managers to address the questions posed by the 2001 ITGI publication Information Security Governance: Guidance for Boards of Directors and Executive Management. The activities identified in this publication include how to:

a) Uncover information security issues in an enterprise, from a business and management perspective;
b) Address management's perception of information security risk and security management issues;
c) Position information security as a component of IT and business governance; and
d) Establish requirements to ensure information security governance is successfully implemented within an enterprise.

Currently, almost every commercial and non-commercial enterprise setup demands for an IT backbone. Every industry requires IT Security Managers' workforce to ensure robust security governance. Careers that can be established in IT governance are:

a) Chief Information Security Manager
b) Security Auditor
c) Security Architect
d) Regulatory Compliance Manager
e) ISO 27001 Lead Auditor
f) ISO 27001 Lead Implementer
g) Security Operations Manager
h) Network Manager
i) Security Analyst
j) Risk Analyst
k) Risk Assessment Manager
l) Security Consultant
m) and more the 15 other career profile

Multiple layers of enhanced security defence or in-depth defence should be established.

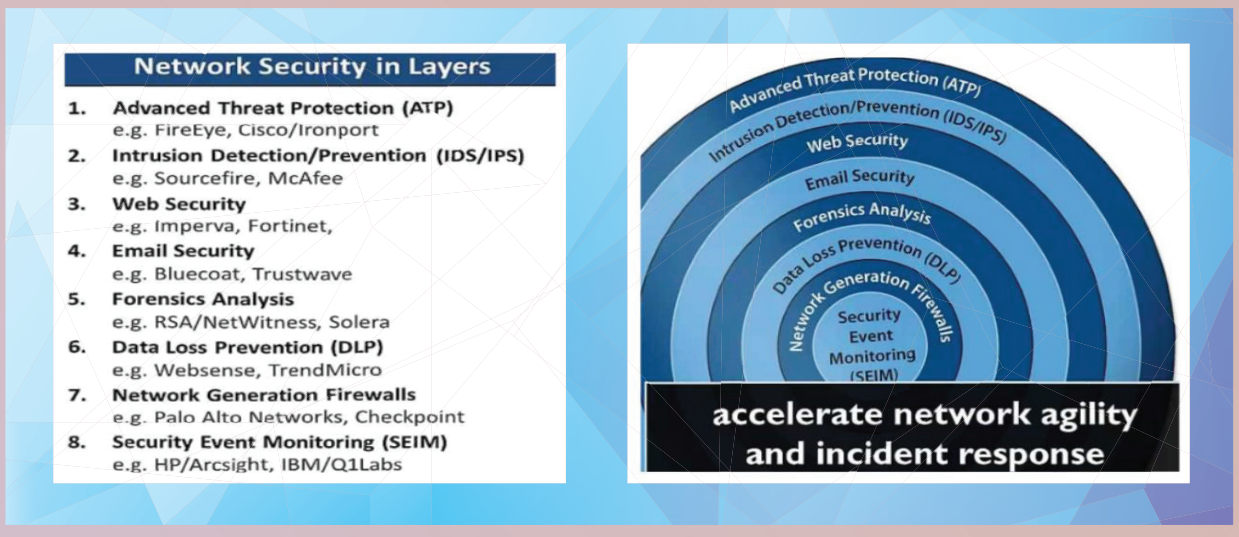


Figure 4 : Network Security in Layers

Figure 5 : Accelerate Network Agility and Incident Response

TECHNOLOGY CASE STUDY 5

4.13 Network Security for a New World

Security threats are getting more sophisticated today. To combat these threats, you need to transform your network into an end-to-end sensor and enforcer that can detect and stop sophisticated security issues faster. Delve into some of the latest innovations that can detect threats in encrypted network traffic, without decrypting it.

a) Are you ready for the Next-Gen APT & Ransomware?
b) Lower risk: Deter 99.2% of network breaches by using the network as both asensor and an enforcer.
c) Recommendations for Digital Leaders to enable their cyber security strategy.

TENGKU SHAHRIZAM BIN TENGKU A SULAIMAN
Consulting Systems Engineer
CyberSecurity Sales Cisco Malaysia

This presentation is on network security for the new world of digital transformation for the government and private sectors to be more connected. It benefits many industries in terms of productivity. But at the same time it also creates new opportunities for the hackers when there are more backdoor access to the network and the Internet, thus compromising the hosts.

Ransomware is an easy profit and most profitable malware in history. It is also lucrative because direct payment is made to the hackers. Ransomware has started way back in 1989. But it wasn't very popular at the time because the network was not used as much as today. Ransomware has affected many industries including the government sectors. It has increased crypto-currency with Bitcoin launched back in year 2009. It has created opportunity for the hackers to gain more benefits over the victims.

There were two examples of ransomware that have been highlighted in this presentation. WannaCry was one of the largest ransomware attack originated from Europe. Nyetya was also originated from Europe. It encrypts the master boot record of a computer. Once it enters a system, it uses three ways to spread automatically in a network, one of which is the known Eternal Blue vulnerability, which WannaCry used as well.

Below are the typical ransomware infection:

a) Infection Vector – Ransomware frequently uses web and email;
b) C2 Commas & Asymmetric Key Exchange – Ransomware takes control of targeted systems;
c) Encryption of Files – Ransomware holds those systems 'hostage'; and
d) Request of Ransom – Owner / company agrees to pay the 'ransom' (bitcoins) to free the system.

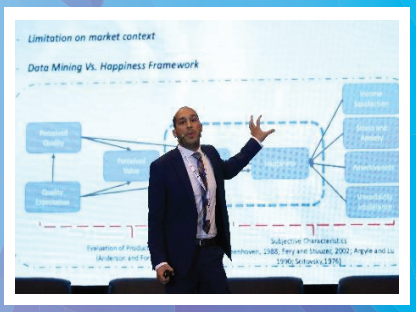
A new method to secure the network is by leveraging the network infrastructure such as the Domain Name System (DNS). This can also identify malware or attack in an encrypted traffic without decryption.

INTERNATIONAL PRSENTATION 5

4.14 Going Towards ICT Transformation Data Driven Customer Experience and the Road-map to Deliver Happiness

Happiness is one of the hardest words to define, however our scope here is to go through the UAE's journey in exploring Happiness through government services delivery. We will cover the service transformation during the 20th century, and how data enables the 4th industrial
revolution, as well as, UAE's journey from measuring satisfaction to identify drivers of happiness and measure happiness. We will also look at Data Mining as a driver to enable the happiness agenda

a) Service Transformation
b) Data Driven Customer Experience
c) Analytical CRM
d) Enable Happiness Agenda through Data Mining techniques



AHMED ALY SHABAN
Senior Consultant Prime Minister's Office, UAE

The presentation is all about Data Driven Customer Experience and The Road Map to Deliver Happiness. The speaker started with four (4) era of service transformation which comprised of:

a) Production
b) Sales
c) Marketing; and
d) Relationship

Then came the fifth era which optimizes the analytics and predictive analysis to construct a future structure about the customer who uses the data. Understanding the customer's needs is the basic thing to gather the customer's expectation and adopting the culture of satisfaction and happiness. Hence, United Arab Emirate (UAE) has established The Ministry of Happiness to take care of happiness. The literature review focuses on:

a) Customer Behaviour which comprised of four (4) dimensions -Cultural, Social, Personal and Psychological;
b) Customer Relationship Management (CRM) which consist of transactions, customer information, descriptive information and, customer preference;
c) CRM Evolution (ERP, CRM);
d) Customer Experience which look into the angle of rational, emotional, sensorial, physical, and spiritual;
e) Customer Experience Value;
f) Last Customer Loyalty & Total Customer Experience; and
g) Data Driven Customer Experience.

UAE has used various types of theory and tools in order to achieve their vision to become:

a) UAE 2021 (to be one of the best nation around the world);
b) UAE Accelerators (Pulling Future Forward Faster); and
c) Happiness and Positivity Agenda.

With 202 nationalities and 9 million population, it is a big challenge to achieve the visions as stated because of the different cultures. Some of the challenges are:

a) Customer's satisfaction versus expectation;
b) Data standardization; and
c) Lack of instant feedback.

To overcome this challenge, UAE started measuring the satisfaction. In 2016, UAE was ranked 28th in the World Happiness Index and leapt to rank number 21 in 2017. In the Global Competitiveness, UAE was ranked 16th. Happiness is not a satisfaction. **Happiness focuses on the** performance **gap between performance vs expectations** from services. On the other hand, satisfaction **focuses on** the overall **well-being** and the role of federal services to **contribute** towards **personal** happiness. Based on a case study in regards to happiness with banking services, there are six (6) drivers of happiness:

a) Key of joyful life;
b) Friendly partner;
c) Competent safe keeper;
d) Intelligent guide;
e) Key to my success; and
f) Growth facilitator.

In conclusion, the model is adapted to cultural realities of UAE happiness of people in their life by using the four (4) quadrant as below:

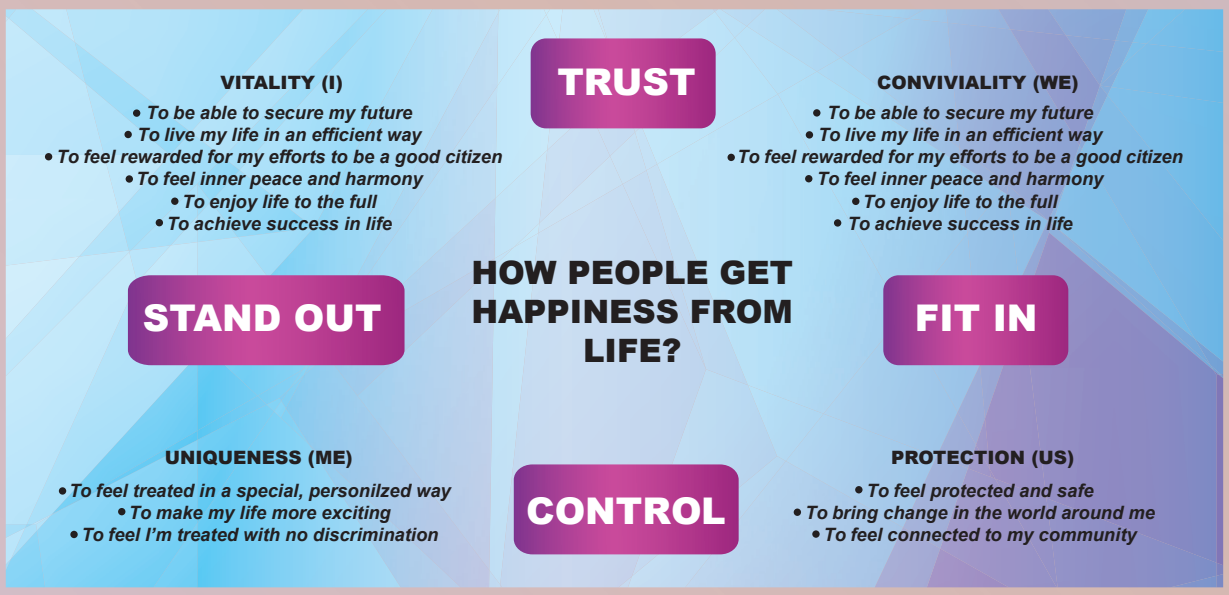


Figure 6: How People Get Happiness from Life

PANEL DISCUSSION 4

4.15 Examining the Pillars of Digital Transformation within the Government

Three things that are mandating Government Transformation: IT evolution, Disruption, and Innovation. Does your agency have the internal culture to:

a) Recognise and adapt to the environmental change in the digital age?

b) Apply design thinking to challenge your approach to technology and government?

c) Build a culture of engagement that supports digital transformation?

d) Connected Government: Infrastructure delivery and network optimisation in the challenge of delivering the 'always on' government?

Panel Discussion 4: Examining the Pillars of Digital Transformation within Government.

Moderator:
BEN DORNIER
Director ANZ
Open Government Asia

Question 1 : What are the roles of the government in digital transformation?

DR.SUHAZIMAH BINTI DZAZALI

Malaysia plays a great role in digital transformation by creating safety of wellbeing and generating economic value. The government should provide the data and move away from doing apps, business and citizen should take part as well.

MORTEN MEYERHOFF NIELSEN

Government transforms itself using technology as an enabler to break the silos. The roles of central agency is important to link the national vision and strategy to the citizen.

AHMED ALY SHABAN

Digital Transformation should be an enabler to the business side as well as for the government to drive cultural change. Competition is very high between the government and the private sectors.

NIZAM ARSHAD

The government plays a very important role in delighting customer (how to serve customer best).

TAN KUAN THYE

Government is for the people. The role is to provide fundamental foundation for citizen and better environment to advance.

Question 2 : Which concept would be more relevant in adapting the evolutional and innovation within the Government for reacting to the disruption from the outside of the government?

DR.SUHAZIMAH BINTI DZAZALI

Reacting to innovation and chasing the digital wave. Because Malaysia is cautious and traditional. Government is the custodian of citizen's data. Put cabalistic framework and policy to get agencies to be more involved in disruptive technology. The government has organized events to encourage innovation from the inside. The government doesn't want to dictate how agencies react, instead, agencies should take lesson outside, such as Uber, Airbnb, etc.

AHMED ALY SHABAN
Innovation comes from the inside. UAE adapted multiple discipline to drive their Digital Transformation.

NIZAM ARSHAD
Innovation comes from the inside.

Question 3 : Can you elaborate the complexity to the Government?

MORTEN MEYERHOFF NIELSEN
Zero tolerance for government errors. The higher complexity of regulation you have, the higher chance for complex errors. Thus, higher expenses and higher risk of ICT projects failure. The key challenge is to change the way you work in the government. First, adopt the lean processes and develop multi skill project team.

NIZAM ARSHAD
Telekom has high level push from management to liberate digital transformation. They established governance and guidelines to avoid silo when driving the digital transformation. Telekom also established the guidelines to protect the organization and privacy of the customers.

TAN KUAN THYE
Internally, complexity is we protecting the rules of evolution, externally is using complexity to create more opportunities.

Question 4 : Are we rebranding Business as Usual (BAU)?

DR.SUHAZIMAH BINTI DZAZALI
Instead of focusing on why government agencies exist, should on how to well govern the country and well serve the citizen. The Government has to be cautious in driving innovation before adapting it. Streamlining business process and seamless data sharing create more opportunities for organizational change. We need to embrace the transformation.

MORTEN MEYERHOFF NIELSEN
ICT is an enabler and driver for innovation. Focus areas to rebrand business are knowledge Society, Info Society, E-Government, AI, Machine Learning, IOT etc. There are different level of customer satisfaction between private services and government services. There is a need to balance the price of government services.

AHMED ALY SHABAN
Outcome based business rebranding.

Question 5 : Please share your experience of dealing with government to drive innovation.

NIZAM ARSHAD
For the past seven years, LHDN has done a good job in transforming the way of tax paying. This has made life easier for citizens and customers.

TAN KUAN THYE

There are indeed many challenges for certain processes. The government is always late to change. The government needs to simplify and provide better ways to deal with changes.

CONCLUSION

It is suggested that the enablement of Digital Transformation within the government can be achieved through building up digital culture, innovation and creativity as well as collaboration with all the parties involved. Besides that, actions that need to be taken include adopting design thinking, practising lean processes, and developing a team of multi-skilled people. One of the key challenges in thriving towards a digital government is to change the way we work and one way to overcome this is by simplifying the business process.

THE GREAT DEBATE 1

4.16 Digital Disruption

Regulation Hinders Innovation

Regulation does not allow business strategies to adopt new innovations to accommodate changes in the market. Regulation is critical to protect both consumers and businesses. Is regulation slowing tech progress and its innovation? Can government utilize disruptive Innovations to their advantage and embrace disruptive innovations in the digital age with their regulations?

BEN DORNIER AND PAUL GAGNON

Proposition:

a) Regulations need to be improved in order to support innovation;
b) Regulations can create red tape;
c) Regulation can sometime prevent new approaches from being implemented; and
d) Regulations hinder innovation from being implemented faster.

RANDEEP SUDAN AND GERRIT W. BAHLMAN

Opposition:

a) Regulations can support innovations as many innovation are funded or developed by government:

   i) IPhones which initially comes from the idea of dark screen are developed in government lab;
   ii) American Air Force has spent 700 million dollar per year for satellites that are also used by GPS; and
   iii) US Defence Advanced Research Project Agency (DARPA) initially developed the internet.

b) Regulations can define boundaries. Innovation can be disruptive if created without boundaries;
c) Without regulation, innovation will be held back;
d) Innovation is taking an idea or invention and trading value of it;
e) Government rules hinder innovation is just a perception; and
f) Government is take a big role in promoting an idea to be innovation.

DAY 2
(6 OCTOBER 2017)

KEYNOTE PRESENTATION - INTERNATIONAL 2

4.17 Digital Economy: What Does The Future Look Like And What Are We Seeing Now?

a) The Rise of Artificial Intelligence: What does the future look like and what are we seeingnow?
b) The Speed of Analytics: How to capitalise onreal-time analytics in order to enhance systemeffectiveness and service quality?
c) Getting Up Close and Personal: How can greaterplatform personalisation improve engagement,convenience and value?

MORTEN MEYERHOFF NIELSEN
Academic Fellow - Operating Unit for Policy-Driven Electronic Governance United Nations University, Portugal
Researcher
Tallinn University of Technology, Ragnar Nurkse School of Innovation and Governance, Estonia

Definitions of Digital Economy are highlighted as below:

a) Digital means technology and data;
b) Economy will obviously be talking about growth, the production of services, product and money supply;
c) Cambridge defines transformation as a complete change of how we do things in order to improve it; and
d) Digital transformation is IT and technology use to change something for the better. It could be faster, cheaper and better new type of services.

The tremendous evolvement of digital transformation has begun to trigger us to think out of the box with questions normally in mind:

a) How is it we are getting to the process with doing less with more?;
b) How do we look at IT use in order to facilitate growth and efficiency?; and
c) What about things like access and trust?

One of the key enablers for the transformation is obviously having people online. It's a little bit like building a road from KL to Singapore, if no one owns cars, there is no reason to build the road. Because the value comes from the use of the road not from having the road itself.

The change that arises from digital transformation has significantly affected the business model of public and private sector:

a) Transformation and innovation;
b) Public authorities are trying to eliminate paper;
Companies and government are looking very much at channel transformation, moving service delivery from the paper based traditional channel onto for instance call centres and online self-services because it is more efficient and cost saving;

d) A lot of countries having electronic identity and signature either on chips or ID cards or mobile solution; and
e) When it comes to traditional public service delivery, it's not about crypto exchange or cryptocurrency, rather it's more about identity management, and authentication of licences on ownership which have appeared in its nature. Therefore, technology acts as a supporting tool to what we have been doing in the government and the private sector all this while.

Technologies are being used in interesting ways such as:

a) Block chain technology for land certification. Block chain allows government to avoid the issuing of paper certificate because the block chain is a registry of those who own the property, what the property is and when it change hands between identities;
b) Identity management in stock exchange;
c) Internet voting. Votes are submitted online; and
d) A gateway that reusing information allowing companies to reuse application for licence renewal over and over again instead of retyping it all the time.

Some significant impacts that we have experienced from digital transformation as below:

a) Sharing of data in government;
b) Changing things in a new way of thinking;
c) Growing ability of data;
d) Implementing ideas that we've had previously and making them work through the use of cognitive learning and technologies, in combination together with the presence of big data and artificial intelligence (AI).
e) Getting all the ideas work well with the technology maturity.
f) Having mobile driverless service unit that you order, it comes to your house, you go out, you get the picture taken, you sign on the dotted line and you go back home. This type allow us to do things differently;
g) Utilizing the data to solve the problems that we have – Smart Cities anf Internet of Things (IOT);
h) Breaking down silos and sharing data between the road department and the utility companies Smart Cities. So they don't take up the road repeatedly, causing traffic jam, but try to minimise that by planning and seeing how to plan, cut cost and cut down on the inconvenience to citizens and businesses;
i) Applying the rules; and
j) Reassuring botnet privacy with the co-operation of security and the increase of data collection.

Conclusion

Where are we going? We are improving. The key point here is, despite the semantics and the new technologies, we are also focusing on change management, innovation that technology allows us to do, a new set of thinking, breaking down silos and that is, in fact, nothing new.

Thus, don't be frightened by the technology, rather use it effectively. For example, we should know how to use different types of emerging technologies in an attempt to facilitate the process of implement things that we have started since then. This is because technology nowadays is able to accommodate most the affairs digitally.

PANEL DISCUSSION 5

4.18 Block Chain Technology

Harnessing the Power of Block Chain Technology in the Digital Economy

Digital currencies and block chain technologies are starting to have a major impact within the commercial market. Its potential benefits and impact have yet to be defined. This will affect government, but in what ways will that be? What are the benefits of Block chain and how will it impact the delivery of services to your community:

a) Improving supply-chain through block chain technology;
b) Building a government business system with Block chain technology; and
c) Creating new opportunities for innovation and growth while reducing cost and risk.

Question 1 : It is not always that we are able to talk about disruptive technology. The fact that 7 years ago from now, we are going to look back on things, where how the change makes things work. That is what block chain really is. There are stages of block chain around the world. It is so exciting that the Head of IMF wiil be making a startling statement this week. She said that block chain and the inherent use of block chain encrypted currency have the potential not only to disrupt the way we look at currency. But also to change, disrupt and ruin the model of banks of the world as well as the national currency. What is block chain? Give a clear description of block chain.

DR. SAMPATH DHAMODARAN

In simple terms, block chain is a trusted technology. It is a technology that provides a trusted system and architecture. It enables commercial transactions and exchange values on a diverse set of digital assets.

Question 2 : What is trusted, commercial architecture? Why should the government be interested?

SUSIE DORAI RAJ

From the government perspective, block chain is another form of computing on a distributed network. It enables us to do secure, authentic and amicable transactions. For the government, this is what we are always looking for. A technology and implementation that enables the government to provide better services. At the end of the day, we are able to provide quick, easy, less costly and efficient government services. So if the technology of block chain enables us to do that, there has to be proof. Research has to be done to show that this technology can be used in the government. Then, the government will definitely look into the possibility of using this technology.

RANDEEP SUDAN

Block chain is a new method of computing technology that can be implemented quickly and easily for the provision of efficient services. More research need to be done for it to be used in the government sector. Everyone has different implementations of block chain. People are using block chain because they have trust in it.

Question 3 : Considering the points that mentioned about IMF and considering the risks that this technology inherits, is block chain is effectively rolled out across the world, who is going to benefit from it? Is this really confined to the financial sector and not to the people on the streets?

RANDEEP SUDAN

Understanding of block chain. It is not applied only to money but can also be applied to anything. The Government has started to look at block chain in different areas. Prime examples of government looking at block chains are as in Dubai. Dubai has launched a strategy on block chain and by 2020, 100 % of all government transactions will be in block chain because it is secured and it removes intermediaries. There are other examples of government starting to use block chain. For example Georgia. They have started to record land transactions in block chain. And for the private sector, containers

move across borders require 38 different forms to be filled. And this has been put on block chain and data needs to be entered once, secured, safe and retained in multiple modes and in multiple places and can track a container using block chain. There are a host of other examples of block chain use. For example Estonia. Estonia is doing health records on block chain. I should have my health data securely between doctors using block chain.

ROBERT TAN CHIANG VUN

Not all transactions are related to commercial transactions. Block chain can be used for distributed data repository. For example, a fleet management company use block chain to store their daily operational data. Not necessarily for commercial transactions.

Question 4 : What is the role of the government in dealing with the promotion and the adoption of block chain solutions? Obviously the government has adopted the use of block chain solutions but how impactful of the government efforts in pushing, promoting and investing in block chain solutions?

DR. SAMPATH DHAMODARAN

All of us, we will have a multiple of backup sources. From the citizens' point of view, if you go to bank A to apply for a loan, we have to submit 10 documents and it will take us a lot of time or two of us to fill up the forms. If you go to another bank B for another service, you will be required to fill up another 10 sets of forms. So for us, from the customer experience, think of out of the 10 forms, what are the risks or what do we want or think of the systems in the future where we submit into one bank and we go to all banks at different times and at different, how quickly we can be served because there will be a form facilitator. Think of how the government agencies are going to provide the data platform.

Question 5 : It maybe that in the best interests of governments around the world, to play a strong role in block chain in order to avoid allowing banks to build that vacuum themselves.

SUSIE DORAI RAJ

I am sorry but I tend to disagree because from this may be true from the perspective of the banks to fill many forms. But the government has changed over the years. We have done a lot of things online and paper less. So my question would then be, if we are already there, with the Pelan Pendigitalan and others, and we can provide the service of a certain level and satisfaction, do you think that the implementation of block chain would improve the service that we are providing? And from the perspective of the government, only if we can see a major improvement in the service level that we provide plus points like ensuring security, authenticity and avoidance of the middleman, cashless transactions, then I would agree that we would go to block chain implementation.

Question 6 : In the last two or three weeks, we had disasters such as Yahoo incidents. We talk about block chain and use the term trusted, how do we approach the government regulation on trusted systems? Can we regulate block chain? How is the government approach to regulation for something like that across systems?

RANDEEP SUDAN
From the government perspective, one key element of infrastructure is digital evidence because we have to connect all data and all transactions. With that, individual's information has to be connected to a person. Similarly, some public service provided to a personthat requires digital ID. What block chain can basically do is that it can distribute data with trusted communication system in different locations and encrypted. Any change will obviously be evident.

Question 7 : What if the information is wrong? How many public trust bill allow a trusted system of that? Well and good but what if the information is wrong?

RANDEEP SUDAN
I have this view that we have to understand that block chain, the basis of block chain is distributed data systems. In other words, conceptually, you do not have that locked server in your data centre that you can manage. All the data will be distributed to thousands of computers where anyone can access to that.

ROBERT TAI CHIANG VUN
The whole idea is that you have thousands of computers out there and to note all of it is impossible. All these data are shared. Whether it is ethical or not to all types of data, the government remains to be determined and it is very crucial to understand. That is the fundamental requirement that data is to be shared. For instance, if data is highly sensitive and needs to be secured, then it may be applicable. How good block chain is? Block chain is not the silver bullet.

RANDEEP SUDAN
While data is distributed, data is encrypted too. Data of my health record is not distributed on systems and data is encrypted and strongly encrypted. It is possible to maintain data in a secured way and cannot be accessed by anybody but you. To edit a block chain, that is a very important aspect. Just recently, just last week, there was a version of editable block chain. Technology is evolving. If you make a mistake, there has to be a method of connecting.

DR. SAMPATH DHAMODARAN
By the fact that there is a fundamental character in the block chain. Block chain is democratised and distributed. Tomorrow if you implement your block chain model, you will not protect. There are mechanisms in our concerns today.

Moderator : People were caught because of block chain. Because of encrypted currency. Cross border flow of finance would be highly regulated, organised crime, international money theft.

DR. SAMPATH DHAMODARAN
Before computerisation, the computers automated the computer systems. But today, in the digital arena and the technology of block chain are those. For example, Trust and security. Democratisation, but not centralisation.

Question 8 : How does the government start ? What is the first initiative that any agency take to get the process of block chain?

SUSIE DORAI RAJ
As in any new technology that comes along in the digital era, this is a new technology hype. What benefits there are to the government sector especially to the citizens? So the best thing to do is to engage with the industry because the experts are there with the industry and learn more what the industry is doing and the benefits and identify some cases where it can be implemented.

Question 9 : Is the industry capable of engaging with the government on this? Or is it like or only one or two companies that deal with block chain?

SUSIE DORAI RAJ
It is something new to the industry as well. So there are not many industry players right now. That is probably something that we need to look into, maybe look outside then but the capability is still out there in the industry.

ROBERT TAI CHIANG VUN
Obviously there are big companies like IBM. There are also smaller companies in Singapore and in Malaysia that have the expertise not necessarily end to end solutions. But there are expertise that can assess the problem and recommend the solution.

Question 10 : What can Malaysia do? What should make Malaysia strategic to block chain? And in government agencies?

RANDEEP SUDAN
Two things. One, having POC in government agencies to engage with block chain companies to understand the technology better and to see how it can be implemented. Two, from the regulatory perspective, perhaps there are sandboxes, regulatory sandboxes and how it can be implemented like encryption. Singapore and Malaysia have sandboxes. These are the top two recommendations to the government.

DR. SAMPATH DHAMODARAN
Government provides the foundation or platform for the industry to perform better. An enabler and facilitator for the industry to grow in block chain. In some countries, they provide and support block chain in banks and shipping industry to create the documents.

Question 11 : Is there a block chain purpose or use case across government agencies or is it only in key areas?

SUSIE DORAI RAJ
I believe there will be if we really look into it and identify the use case.

ROBERT TAI CHIANG VUN
The internet has a lot of information. Anyone who has access to the internet has first

thing to do is to understand what it is. At least, conceptually understand what it is. If you think it is applicable and then if it is applicable, then engage with the expertise.

CONCLUSION

Block chain is not about generating money but can also be applied by the Government. Its technology not only secure and authentic, but it can also perform amicable transactions. This method needs to be explored by Government to gain benefits in delivering fast and efficient services.

TECHNOLOGY CASE STUDY 6

4.19 Digital Spying Eyes

Digital Spying Eyes targets individuals, organisations and governments

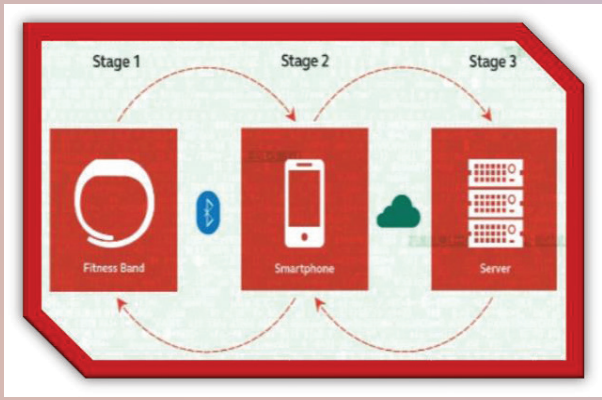
a) Depending on tool and technology alone is not enough.
b) Always deal with the root cause of a problem, instead of closing the gaps; and
c) It is never too late for the government to create awareness in security concerning technologies.

STEFANUS NATAHUSADA
Sales Engineer
Kaspersky Lab Singapore

This topic covers the security concerns and recommendations of current technologies:

a) Smart/fitness bands

i) Function to check/monitor your health/fitness;
ii) Users need to input their personal information into the system;
iii) The concern is what kind of data collected. If the data is leaked, is it the hackers fault or the users' voluntarily provided their data;
iv) Smart bands are connected through Bluetooth to the smart phones and the data is transferred to the servers in cloud (the key components are the smart phones and the servers);
v) There is no non disclosure agreement (NDA) to prevent the data from being exposed. Thus, individual information will be benefited by some interested parties for targeted advertisement and commercial use.
vi) From Kaspersky's point of view, smart bands are not secured at all. None of the smart band apps has the basic security features such as lock screen or require a PIN to unlock the device; and
vii) Advice for smart band users:
- Be cautious in exposing/ personal information/data;
- Use a strong and unique password for each account; and
- Only use features really needed and avoid giving out any personal information that would be stored in the cloud.



terminals; and
- Road infrastructure components (e.g: speed cameras, traffic routers.)

iii) Recommendations for smart terminals:
- Prevention measures for any user to get in control of the system on the START button; and
- Software protection.

b) Smart terminals (smart city)

i) Smart terminal is an embedded system that:
- Installed in public places and is available 24x7;
- Has a high user trust level; and
- Processes user data, including personal & financial information.

ii) Smart city components involved in smart terminals include:
- Touch-screen payment kiosks (tickets, parking etc.);
- Infotainment terminals in taxis;
- Information terminals at airports and railway

c) Speed cameras (smart city)

i) Speed camera is using network connection with TCP/IP; Presence of IP addresses leads to vulnerability;

ii) Among the security concerns is open ports that enable access to database; and

iii) Recommendations for the government to increase the security of speed cameras:
- Full-scale security audit and penetration testing must be conducted. Deployment and rollout are insufficient.
- External IP address should not be used.

PANEL DISCUSSION 6

4.20 Cloud Centric Internet of Things Shaping the Vision of Smart City

The newly emerging Internet of Things (IoT) offers great potential in providing unique access community data at a scale not previously realizable. Currently several billions of sensors and devices are connected to the internet, monitoring and accessing vital aspects of the societies:

The panel discusses:

a) Learning and leveraging the knowledge that can be extracted from 'Digital Infrastructure' to manage the critical infrastructure;
b) Capitalising on cloud computing to provide new ways to store date and to provide software solutions; and
c) Exploring techniques that integrate Cloud and IOT (virtual and physical infrastructure) to offer intelligent solutions in meeting the increasing demands of the modern population.

Moderator:
GERRIT W. BAHLMAN
Director of Information Technology Hong Kong Polytechnic University

PANELLIST 1
AISHARUDDIN BIN NURUDDIN
Senior Director
Technology & Society Division
Malaysian Communications & Multimedia Commission (MCMC)

PANELLIST 2
SOPHIA BINTI HASHIM
Principal ICT Consultant - Technical
MAMPU

PANELLIST 3
TIMOTHY LEE
Chief Information Security Officer (CISO)
City of Los Angeles, USA

PANELLIST 4
AMOL MITRA
Chief Technology Officer
Aruba Asia Pacific a Hewlett Packard Enterprise Company

Question 1 : What is the example of IoT used in government to support smart city?

AISHARUDDIN BIN NURUDDIN

MCMC has done a few Proof of Concept (PoC). There are two most successful projects. First, bird nest export protocol to China requires the Malaysian bird nest exporters to have the Radio Frequency Identification (RFID) certificate that enables deletion of the locations of problematic bird nest using radio wave frequency. Second, IoT was used for their second project to measure water parameters in monitoring oxygen level for freshwater fish which is to be exported to Singapore, in order to ensure a perfect condition for the expensive fish. Projects were funded by MCMC. MCMC has also been collaborating with JAKIM in developing two mobile apps that promote IoT which are Smart Al-Quran and Smart Halal which will be launched by early of next year.

Question 2 : Is there any funding/allocation from MAMPU for the IoT projects?

SOPHIA BINTI HASHIM

Public Sector is still in early stage of adopting IoT for crime surveillance, traffic control, and utility management. The three technological characteristics of IoT are smart devices, linked to networks and clouds requiring different suppliers for each. The budget for government's application projects including the IoT implementation is reviewed and approved by Public Sector ICT Technical Committee (JTISA) or through grants from MOSTI and MCMC. JTISA also looks into common applications that can be developed centrally or agency-specific.

Question 3 : Are there other agencies/parties involved?

TIMOTHY LEE

In Los Angeles (LA), there are two types of things/sensors: the IoT and the Network IoT. For example, the IoT for traffic and streets, they used the sensors to control the apps. The mobile apps are also to remind the user that they had created tickets of issues. The costing for IoT implementation is USD 3 million per year.

AMOL MITRA

HPE Aruba is a network infrastructure provider and vendor in supporting the IoT. The company has the facilities to develop and implement IoT projects. For example, HPE Aruba provides Smart Grid (ability to enable the Street Light as well as control the luminosity) for Hong Kong Power Station. HPE developed network infrastructure for mining the data of traffic cameras and data analytics to intelligently manage the traffic flow within the city. IoT is eventually a broadcast connectivity. The IoT requires multiple media such as WAN and LAN connectivity. The important thing in IoT is security. In order to effectively use IoT solutions, the infrastructure that capable to support that solution is required in terms of connectivity, security and analytics. Aruba have multiple ecosystem partners to support IoT solutions and smart implementation.

Question 4 : Is PoC a good idea to build the solution?

AISHARUDDIN BIN NURUDDIN

We have at least 10 technologies such as GSM. By implementing an experimental approach, for example, conducting a PoC on a small scale project before establishing a new standard or technology makes the risk minimal and manageable in the event of project failure because of the trial standard. In the process of proofing for a new standard or technology, one needs to remain neutral and not biased towards certain aspects of the technologies.

Question 5 : How much time taken for the IoT projects or apps to be developed?

SOPHIA BINTI HASHIM

There is no total off-the-shelf solutions for IoT. The technological characteristics of IoT in the smart devices will be provided by one vendor, the network by another vendor and the services such as cloud by yet another vendor complicates the project. It will take time as many aspects for a total solution need to be looked into. The estimated period for IoT application development is about two to four years with consideration on conducting a thorough research.

Question 6 : Dedicated network in collecting information from IoT sensors. What are the security issues concern? How does the City of Los Angeles (LA) discover the algorithm? What do you do with the data to make it useful?

TIMOTHY LEE

IoT security is no different from the Internet security in the terms of the amount of data that is useful and how to filter out the useful data. Large scale of DMZ network is to be managed in implementing the IoT security. In LA, we have CISO to handle issues for security such as the DDoS threat that disrupts the access to services. We have to identify what data to be published and made publicly available for the benefit of the citizens.

Question 7 : IoT usage in education, for example Smart Classroom. What do your company have to cope with in providing the education solution in IoT? How do you make the IoT work?

AISHARUDDIN BIN NURUDDIN

MCMC has been setting up platforms such as myMaker IoT lab and myMaker.io to expedite innovative and creative culture within people of various disciplines where they could collaborate on projects. The lab is equipped with facilities such as a 3D printer and a laser cutter. Training and hands-on to guide on how to use the facilities are made available.

AMOL MITRA

We have innovation lab in Singapore as well as the engagement and solution center. Capable partners are invited to collaborate to develop great solution infrastructure in these facilities. For example, we assist our client to connect with the right vendor to develop parking environment sensors which have the ability to react to the changing condition to the cities.

Question 8 : What is the assurance for the citizens, for example using smart home?

TIMOTHY LEE

Smart city is designed to improve people's life. In LA, exhaustive researches in the area of Privacy Policy for IoT devices to assure the privacy of users. Standard is one of the assurances in user's data privacy.

CONCLUSION

Advances in integration of cloud, IoT and Intelligent solutions are on the rise intandem with the demands among modern societies. These kind of innovative projects require extensive researches, creative culture across various disciplines and highly collaborative nature of different project teams to be successful.

INTERNATIONAL PRESENTATION 6

4.21 Digital Transformation in Public Service Ecosystem

How Open Data Can Enhance Collaboration and Service Co-creation between Public Agencies and The Society

The power of data as a source of public and commercial values is increasingly recognized all over the world. In order to turn data into public value, central and local governments are encouraged to publish their datasets as open data. However, evidence shows that simply publishing open data is not enough. These data must actually be used to create new value-adding services. How can this be done? What are the necessary actors, infrastructures and processes constituting the ecosystem for data-driven co-creation public services?

a) New understanding of 'public' services and public service ecosystem;
b) Service co-production and user engagement; and
c) Agile development.

MAARJA TOOTS
Researcher
Regnar Nurkse Department of Innovation and Governance
Tallinn University of Technology, Estonia

This presentation lays on the foundation for:

OpenGovIntelligence, is an EU-funded research and innovation project (2016-2019) in Estonia that aims to improve public services by using Linked Open Statistical (LOSD). Estonia has been building a digital society since 2005. 99% of their public services are available online. 900 organisations and databases are connected via X-Road, the backbone of e-Estonia involving more than 500 million transactions a year. Digital transformation is embraced through digitisation of back office processes, emergence of e-services, crowdsourcing and co-production. However, much of the potential of digital technologies still remain untapped although the country has digital transformation initiatives. OpenGovIntelligence fundamentally involves development of a user-centric ecosystem, which enables the co-production of data-driven services by the public administration and the society as well as development of ICT tools to enable the exploitation of data. This approach was tested through pilot projects in 6 participating countries: Estonia, Ireland, Belgium, Lithuania, UK and Greece (each country focusing on different public services). OpenGovIntelligence focuses on public value and ways to enable the government to become an open platform that allows the government and the cities to co-create public value.

Public value is defined as total societal value that cannot be monopolised by individuals, but it is shared by all actors in the society and is the outcome of all resource allocation decisions. The increased connectivity of citizens and businesses, the possibility for people to work together, perform tasks and distribute workload regardless of distance and boundaries as well as the availability of previously closed information and data signify that government tasks can also be

performed completely or in part by citizens, companies and other stakeholders.

The pilot project conducted by Estonia is known as Estonian Real Estate Pilot and mainly concentrates on countering information asymmetry in real estate market by linking and visualizing data from diverse government databases in one user-friendly interface. It focuses on helping people find the perfect place for their homes or businesses. It involves co-creation process from beginning to end. The development of the services gives way to the establishment of the New Public Service Ecosystem as in Figure 7. The central of the ecosystem is the process of co-creation.

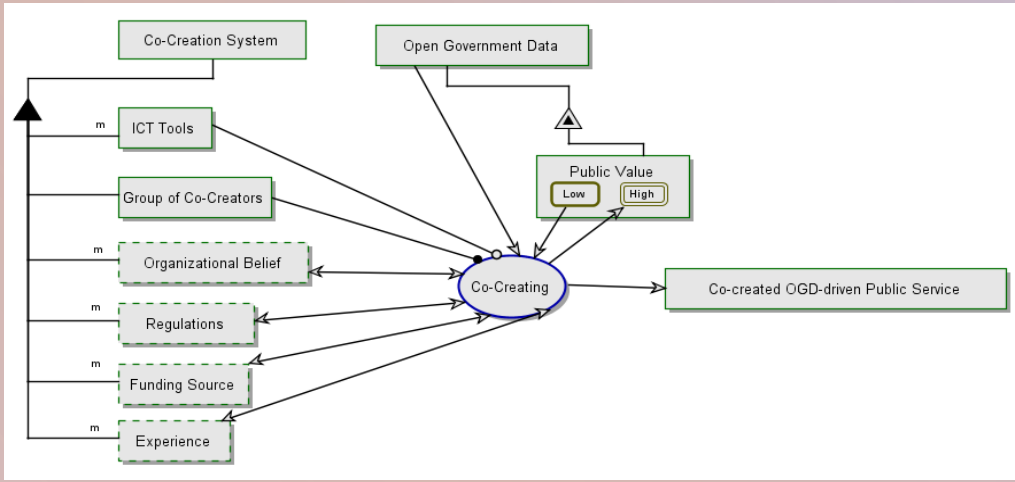
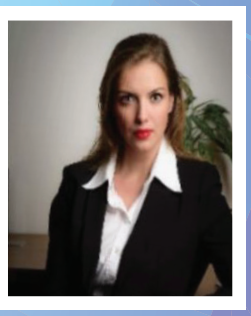


Figure 7: The New Public Service Ecosystem

In conclusion, digital transformation in public service ecosystem involves simultaneous transformations of three major aspects which are data, stakeholders and services. These transformations can be done by providing easy access to information, encouraging innovation, decreasing barriers to participation, starting small and simple as well as continuous learning and improvement.

TECHNOLOGY CASE STUDY 7

4.22 TN50 Vision of Future Government



JOSEPHIN GALLA
Director
Public Sector & Security
South East Asia, SAP

HAZMIN RAHIM
Director of Business Development
Public Sector Malaysia
SAP

A showcase on how today's technology can shape the future of Malaysia in achieving its goal to be one of the top 20 countries by 2050 connecting people, processes and things to gain greater insights and drive forward the digital economy agenda:

a) Investigating how "Whole of Government" concept creates scalability, and economies of scale;
b) Showcasing innovations driven by machine learning and blockchain; and
c) Future cities – a framework for connected governments, inclusiveness and increased liability index.

Three major trend in Asia, in particular Malaysia are:

- Fight Fraud with Blockchain;
- Convergence of Blockchain and Machine Learning; and
- Road to TN50

Fight Fraud with Blockchain

The Assistant US Attorney from the US Department of Justice, Kathryn Haun, was involved in the Dark Net by Silk Road case. She used transaction of bitcoin to investigate criminals individual and finally caught that individual. The system is very complex and perfect for criminal because it involved drugs, passports and illegal documents transacted online with payment made using bitcoins. The criminals could only be traced when they made a transfer a huge amount of bitcoins into their private bank account. Thus, US Government has been tracking blockchain transactions to uncover fraud.

Convergence of Blockchain and Machine Learning

Machine learning and other emerging technologies are converging allow governments to fight fraudulant cases better. Business transactions have a pattern that could be used to trace criminals through emerging technologies. People still need machine to do their work especially in recognition activity. In Malaysia, these technologies was proposed to fight fraud.

Cybercrime in Malaysia

Based on cybercrime statistics from Royal Malaysia Police (PDRM) in 2016, the age of teenagers involved in cybercrime are between 15 to 25 years old. The driver of cybercrime is affordable technology devices and software that are available in the market oblivious. Therefore, government must study this issue more seriously.

Road to The Future

The future hinges on connectivity with the wide spread of pervasive technologies such as IoT, big data and augmented reality to be spread to all people not only in businesses. Hence, how do we feel safe to use our smart devices?

CyberSecurity Malaysia (CSM) an agency under the Ministry of Science, Technology & Innovation (MOSTI) has looked into the investigation in digital forensic since 1998. CSM will continue to innovate as the ecosystem and the needs of people keep changing.

Cyber Trends

In 2050, technology of IoT and the connectivity of devices is the medium across users and businesses. SAP believes holistic digital innovation such as:

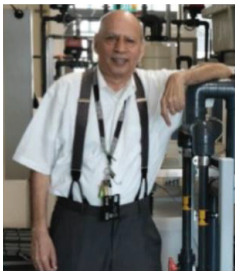
a) Platform that is able to look into the integration of future technologies;
b) Platform that is able to look into future technologies within safety portfolio;
c) Technology that is able to look into people, processes and platform;
d) Scalability, expandable and redefine services; and
e) Platform that is tremendous and innovative.

INTERNATIONAL PRESENTATION 8

4.23 Can AI Secure Critical Infrastructure?

Complex and critical public infrastructure includes systems for water treatment, water distribution, power generation and distribution, and mass transportation. Cyber attacks on such systems are on the rise, and many have been successful. This talk will focus on challenges faced in the design of secure critical infrastructure and review how Artificial Intelligence (AI), combined with physics-based approaches, might be a viable solution for rapid detection of cyber attacks and prevention of disastrous consequences.

a) The rise of cyber attacks on critical infrastructure: Can we defend?
b) Can AI be combined with physics to create detectors of cyber attacks?
c) How can we design secure critical infrastructure before it is built?



PROF. ADITYA MATHUR
Head of Pillar
Information Systems Technology
&
Design and Centre Director, iTrust
Singapore University of Technology and Design (SUTD)

Critical Infrastructure and incidents

Center for Research in Cyber Security (iTrust), Singapore University of Technology and Design is focusing on energy and water sectors of infrastructures which are identified by NCCIC/ICS-CERT. Examples of recent cyber attacks are Iranian nuclear enrichment plant, German steel mill and Ukraine power grid. The research objective is to determine the usefulness and effectiveness of Artificial Intelligence (AI) in defending critical infrastructure against cyber and cyber-physical attacks. Artificial Intelligence (AI) is a field wherein algorithms and tools attempt to mimic human intelligence in their actions.

The process of defense consists of prevention, detection and control. iTrust focuses on detection which identifies and report process anomaly with 100% accuracy and zero false alarms. It also provides control with taking appropriate actions after detection. Generally, attackers can be categorised into external and internal. External attackers can become internal through extensive reconnaissance and social engineering. Existing approaches for detecting anomaly based attack of detecting anomaly based attack are network, process and combination of network and process while research focuses on process approach.

Two types of detection approaches are design-centric and AI-Centric. Design-centric involves operation plant design to the plant network and controllers by using physics and AI invariants. In AI-centric approach, the operational plant uses data to Machine Learning (ML). Then the ML will use invariants to plant network and controllers.

The current control implemented today with operation plant produces command to circuit breaker while the future AI-based control produces validation engine command with real-time knowledge base (environment). Only valid commands will go to circuit breaker. The testbeds at iTrust are specific for protecting electric power generation, transmission, distribution, advanced metering infrastructure (AMI) on

water treatment and water distribution.

Summary

a) Attack detection can be highly accurate with near zero false alarm rate when using design-centric approach combined with Machine Learning (ML);

b) AI holds promise in command validation as a means to prevent any attacker from initiating commands that arrive at actuators; and

c) The real challenges is to create real-time, accurate and useful knowledge base and command validation engine.

PANEL DISCUSSION 7

4.24 Machine-To-Machine (M2M) Communication

Improving City Productivity through Cognitive Computing

In the smart IoT venues of the future, everyone from start-ups to enterprises to homeowners will make decisions using facts rather than instincts. Cognitive computing uses data and responds to changes within it to make better decisions on the basis of specific learning from past experiences, in contrast with a rule-based decision system.

The panel discussion focuses on:

a) Incorporating planning, forecasting, reasoning, and recognising information processes into the existing IoT for immediate benefits;
b) Forecasting more accurately through familiarity with anticipatory and predictive systems;
c) Interpreting advanced data models to reap the full benefits of the technology;
d) Reduce the significant data and time required for learning through quickest exchange of information and collective learning whilst preparing for the dynamic needs of the solution; and
e) Making cities smart with big data analytics as new data are integrated to discover new relationships.

Question 1 : What is the definition of M2M communication?

DR. MOHAMED SULAIMAN BIN SULTAN SUHAIBUDDEEN
Every machine connects with each other to interpret requests by human. For example one machine have an algorithm or a rule to interpret one aspect, and the other machine have a different set of rules to interpret a specific request. Combining these interpretations can give accurate set of understanding of the request or data.

PROFESSOR DATO' DR HALIMAH BINTI BADIOZE ZAMAN
The M2M communication is defined as machine-to-machine talking with one another and the computers or devices are connected to human (human intervention). The machine made observation and analyse data to help the human in decision making.

YEOH CHEN CHOW
In terms of M2M, think of business purpose. The panellist gave an example of using customer data in the context of a 'gerai' at a food court. Think of questions about customers that can be answered by using M2M learning such as:

- How do you know your customer?
- Who are your customers?;
- Why they return?;
- Why they do not come back?.

Basically by using wealth of data from routine daily lives, each 'gerai' at the food court get the right information so that they can take strategic actions to improve their businesses.

GEOFFREY SOON
The definition of machine learning is when a machine is able to make decision based on data and artificial intelligence (AI) embedded in the machine. So, why AI did not take off is because big data is not happening. Big data is not about how much the data is, but it's about the construct of structured, semi structured and unstructured data coming together using AI platform to understand that data. And now we allow machine to learn those insights and make decision for us. In short, starting with big data, leveraging on the power of AI and wrapping around with machine learning, we can continuously learn and make decisions better.

Question 2 : How does the government use M2M?

DR. MOHAMED SULAIMAN BIN SULTAN SUHAIBUDDEEN
Traditionally, the use of M2M is based on demand and supply. For example, the data of patients in a hospital is ready to be used as part of big data in M2M learning.

Question 3 by Moderator: How does the M2M learning help to use the data?

PROFESSOR DATO' DR HALIMAH BINTI BADIOZE ZAMAN
Machine learning involves three body of knowledge in computer science, statistics and psychology. Governments are usually reactive in adopting new technology. Statistic involves data and analysis. Meanwhile, psychology is the most crucial knowledge in the planning phase so that human behavious and learning can be programmed into the

system. Then, the intelligence exists in the system.

Question 4 : How does the M2M process start when they have the data?

YEOH CHEN CHOW

It starts with the basic which is 'What kind of data that you have'. Then data analysis begins by asking 'What question need to be answered'. Referring to Prof. Halimah's notion on the combination of three body of knowledge, the panellist gave a real life example. DBS Bank is the most premier digital bank. When asked about the vision and mission of the Bank, their answer was very intriguing. 'We want to make sure that our customer's questions are answered before they ask'. Hence, 97% of DBS Bank customer queries are derived from the website or online services. Data is collected on behaviours by what they're looking for at the website. The data can be expanded by understanding the customers' behaviour and customising services according to their needs.

Question 5 : Anybody deploying M2M learning? How M2M help us tomorrow?

PROFESSOR DATO' DR HALIMAH BINTI BADIOZE ZAMAN

As an example of Smart Cities solution, wearable devices are used in a Smart Home to monitor elderly activities to minimise fatal accident. A study has been done to create a very simple wearable computing device which uses M2M learning for elderly. The device is rudimentary so that it is very easy to use. They built it for an elderly that can't read and write, by building an analogue watch that are connected to another device so that the device can talk to each other. The watch is controlled via validation system to help the elderly by using simple instruction. This action can be used in case of emergency such as fire by saying the word 'emergency'. The device will automatically call 911 or set to call a family member. This is an example how machine to machine communication can be used in daily life.

DR. MOHAMED SULAIMAN BIN SULTAN SUHAIBUDDEEN

The panellist gave an example of enhancing husband and wife's communication by having GPS-enabled service to know each other's location without asking or calling. They can share a lot of information by using M2M. Even so, they have to make sure legality to their privacy is met by the providers. M2M help the machine learning new pattern through algorithm and generating results beyond human thinking. No human intervention is needed.

Question 6: Smart Cars applies machine to machine connect without human intervention. But it is complicated. How do we apply smart technology in day to day job?

GEOFFREY SOON

Taking an example of customer credit card fraud. One thing that can be done by appliying this smart technology is to understand 'What are customer behaviours that are fraudulant. If the credit card is used via mobile app in their smart devices, and if the customer frequently change different credit card, this signals potential fraud. So the app can be set intelligently to limit the number of credit card with certain authority. Machine then learn who behaves in this manner and alert the bank. Another example is when a

customer frequently changes password. All these human behaviours online can be an input data to a machine that analyses the collection of data to build pattern of potential fraud. The machine will learn from the patterns of behaviour and make prediction to counter fraud.

YEOH CHEN CHOW

How do we upgrade the productivity and efficiency of services to the public by leveraging Chatbots. Users are frustrated with telephony services by banks because we have to keep pressing button such as “Press 1 for A, Press 2 for B etc”.

Imagine machine that learn through conversation, public and private companies know how to channel the customer to what they want without pressing any button. We have to put this mind-set to embrace changes and simplification of customer service by leveraging on M2M learning.

CONCLUSION

M2M communication is an emerging technology, which is now replacing human decisions making. Moving forward, we have to be open and put efforts in uncovering AI elements that drive more data and computing power to increase productivity and efficiency.

TECHNOLOGY CASE STUDY 8

4.25 Unlock The Power of Big Data and Artificial Intelligence

The fundamental role of smart networking in enabling the Digital Transformation

a) Innovative network infrastructure to boost cloud center efficiency;
b) Uncovering the power of AI to accelerate your business; and
c) Open network solution to bring freedom of network choice.

TONG LIU
Senior Director
Market Development of APJ and China
Mellanox APJ and China

AI technology is needed inside each segment such as smart cities, smart society, healthcare, public security, media entertainment and finance.

The fundamental role of smart networking in enabling the Digital Transformation are:

a) Innovative network infrastructure to boost cloud center efficiency;
b) Uncovering the power of AI to accelerate business; and
c) Open network solution to bring freedom of network choice.

Three elements are driving AI become a reality (we need more data, better training model and faster hardware). Big data and AI requires super computing power. How we are going to make computing power become much faster in a more innovative way?

The comparison of the CPU-Centric architecture and Data-Centric architecture to process machine learning and AI scenario:

a) CPU-Centric architecture

CPU has to wait for data to arrive to do the process and computation. The machine learning are now doing serial computation but in AI they have to do parallel computation. The CPU and CPU's have to work together. If one process slows down the whole computation will be slowed down. The bottleneck created by the traditional CPU-Centric doesn't work for AI.

b) Data-Centric architecture

Data centre design need to consider network for data movement from one to other location in order to retrieve, save data and analyse data or update process as being part of data movement.

Network computing become more critical in AI scenario. It will reduce processing time from 30 microsecond to 3 microsecond.

The comparison of Traditional Network Transport using TCP and Smarter Data Transport using RDMA:

c) Traditional Network Transport (TCP)

TCP using resource consumption, very high overhead transport, and your data cannot be move repentantly. Data from memory and application break into several segments, goes through CPU, pass to the network adapter and transfer to the remote computer. Also the same process, your network adapter have to break down, pass to CPU to do the packet processing and then transfer to your application memory. It is a long cycle and big overhead. CPU need to be involve for data communication. CPU need to call kernel to do packet processing and memory copy in the data path.

d) Smarter Data Transport (Remote Direct Memory Access (RDMA)

RDMA is a direct memory access from the memory of one computer into that of another without involving either one's operating system. This permits high-throughput, low-latency networking, which is especially useful in massively parallel computer clusters. RDMA supports zero-copy networking by enabling the network adapter to transfer data directly to or from application memory, eliminating the need to copy data between application memory and the data buffers in the operating system. Such transfers require no work to be done by CPUs, caches, or context switches, and transfers continue in parallel with other system operations. When an application performs an RDMA Read or Write request, the application data is delivered directly to the network, reducing latency and enabling fast message transfer.

Mellanox devices which support RDMA technology. Provides end-to-end network solution (adapters, switches, cables). Only with smart network you can make machine-learning smart and efficient. RDMA is one of the smart network. Nowadays data centre are moving from 1GB to 25GB network speed. 25GB is the most cost effective network solution for your data centre with RDMA support. 25GB is the ideal network for most cloud centres and for AI should consider for 100GB.

Converting from TCP to RDMA will result in double performance. If using AI, it is recommended to switch to RDMA and see the benefit immediately. Example of company or product using RDMA:

a) NVIDIA Deep Learning Appliance running with 100GB RDMA network to deliver best performance
b) Facebook use 25GB RDMA
c) Microsoft Azure Cloud Server
d) Alibaba using 10GB RDMA

Mellanox network adapter not only can handle data communication but become co-processor and can do computation to make your application much faster. Running big data and AI need higher data speed, 10GB is not enough, you have to start from 25GB and upgrade to 40GB, 50GB and 100GB. Need a smart network to move data faster, make efficient transport and better security because data is your asset.

5.0 PUBLIC SECTOR CIO CONVEX 2017 DIGITAL CARNIVAL

In conjunction with the PSCC 2017, 35 exhibitors from Government and private sector participated in Digital Carnival Exhibition. The list of exhibitors as follow:

TABLE 1 : EXHIBITORS FROM MAMPU

NO.	EXHIBITOR	PRODUCT
1	Bahagian Pembangunan Strategik dan Arkitektur ICT	• Government Enterprise Architecture (1GovEA)
2	Bahagian Perundingan ICT	• Malaysia Testing Center of Excellence (MyTCoE) • Government Online Services Gateway (GOSG)
3	Bahagian Pembangunan Perkhidmatan Gunasama Infrastruktur dan Keselamatan ICT	• Pusat Data Sektor Awam (PDSA) • 1Gov*Net • 1GovUC • Government Public Key Infrastructure (GPKI) • Cyber Security Development Project (CSDeP)
4	Bahagian Pembangunan Aplikasi	• Gallery of Malaysian Government Mobile Applications (GAMMA) • Digital Document Management System (DDMS)
5	Bahagian Kerajaan Digital	• Data Raya Sektor Awam (DRSA) • Data Terbuka Sektor Awam (DTSA)
6	Bahagian Penyelidikan Pengurusan	• MalaysiaBiz

TABLE 2 : EXHIBITORS FROM GOVERNMENT AGENCIES

NO.	EXHIBITOR	PRODUCT
1	Kementerian Kesihatan Malaysia	● Malaysian Health Data Warehouse (MyHDW) ● MySihat Online Evaluation System
2	Kementerian Perdagangan Antarabangsa dan Industri & Malaysia Digital Economic Corporation (MDEC)	● Digital Free Trade Zone (DFTZ)
3	Jabatan Perkhidmatan Awam	● Digital Government Competencies & Capabilities Readiness (DGCCR) ● JPA4U Mobile
4	Kementerian Kewangan Malaysia	● National Blue Ocean Strategy (NBOS) Initiative
5	Suruhanjaya Perkhidmatan Awam	● List of available posts in Government ● Consultancy on job opportunities and recruitment in public sector
6	Kementerian Pendidikan Malaysia	● Live event - Education Initiatives

TABLE 3 : EXHIBITORS FROM PRIVATE SECTOR

NO.	EXHIBITOR	PRODUCT
1	CA Technologies	Security
2	Cisco	Networking
3	SAP	Software solution
4	NetApp & Glocomp	Cloud
5	Dell EMC	Storage
6	Fire Eye	Security
7	Kapersky	Security
8	Mellanox	Hardware
9	Forcepoint	Security
10	Cloudera	Big Data Analytics
11	Splunk	Network
12	VMWare	Data Centre Software
13	Huawei	Data Centre Technology
14	Hewlett Packard & OGX Networks	Networking
15	Arista	Cloud
16	Cloud Vision	Image Analytics
17	EG Innovation	Performance Monitoring
18	Fortinet	Security
19	Redhat	Open source
20	Ofisgate	Security
21	HID Global	Security
22	KS Networks	IT Solution
23	Crest Infosolutions	IT Solution

The objective of Digital Carnival is to showcase Malaysian Government's current ICT initiatives and also private sector's latest update of products/technologies from various ICT field. Besides, it also provide participants with opportunities to participate in gamification activities during visits to the exhibition. Participants are supplied with a Digital Carnival Passport as shown in **Figure 8** for stamping at the identified gamification booths. Participants must complete Digital Carnival Passport stamping to be qualified for the lucky draw at the end of the conference.

Figure 8: Lucky Draw for The Digital Carnival Passport

Lucky Draw Result Announcement

6.0 HACKATHON 2017 AWARD

The Open Data Hackathon 2017 was held from 11th until 13th September 2017 at the Malaysian Global Innovation & Creativity Centre (MaGIC), Cyberjaya, Selangor. The strategic partners for this event were Telekom Malaysia (TM), GTN Sdn. Berhad (GSB), Malaysian Global Innovation and Creativity Centre (MaGIC) and the Malaysian Digital Economy Corporatoin (MDEC).

The Open Data Hackathon was divided into three (3) categories, namely Public Sector, Industry and University (both for 48 hours) and High School (30 hours). While the Mobile Application Hackathon only offered for Public servants and it was carried out for 24 hours.

The award giving ceremony for both winners of the Open Data Hackathon and Mobile Application Hackathon, was successfully held at the Public Sector CIO CONVEX 2017.

The list of the winners are as follow :

TABLE 4: WINNERS FOR OPEN DATA HACKATHON AWARD -PUBLIC SECTOR CATEGORY

NO.	WINNER	GROUP	PRODUCT AND DESCRIPTION
1	First Place	PHARMACODERS	**Product: Health Traveler Malaysia (HTM)** **Description:** HTM allows medical travellers to find a good quality and experiences the most affordable treatment in Malaysia by providing a concise information of hospitals, accommodations and pharmacies. HTM also provide essential information, such as, hospital speciality and location, as well as contact details for selected nearby hotels or homestay.
2	Second Place	PEGIS	**Product: Love And Care** **Description:** A mobile application to facilitate the vulnerable users, such as senior citizens, children and OKUs to plan a more comfortable life. In addition, this application also assist the government to provide better facilities for those groups.

TABLE 4: WINNERS FOR OPEN DATA HACKATHON AWARD -PUBLIC SECTOR CATEGORY

NO.	WINNER	GROUP	PRODUCT AND DESCRIPTION
3	Third Place	ROSHACK	**Product: Safer 2 School** **Description:** The 'Safer 2 School' provides a platform to assess the road safety level in the school area. The safety elements at the particular school can be incorporated to generate safety scores. This environmental safety elements have been identified by an international body known as the 'International Road Assessment Program (iRAP)'. This application has utilized the latest school data (KPM) available at www.data.gov.my, to provide road safety status for parents and students, as well as a road safety report mechanism for teachers and students. In short, this application helps to provide road safety overview and safer school environment.
4	Fourth Place	IMAN	**Product: e-Musafir** **Description:** A web application that provides information to Malaysians who want to travel overseas.
5	Fifth Place	MARINEHACK	**Product: eFerryLive** **Description:** The eFerryLive application is developed to facilitate passengers who are concern of waiting times, especially passengers and tourists who are travelling with families comprising children, disabled or senior citizens. Using this apps, users manage to plan their travelling time and have a pleasant vacation.

TABLE 5: WINNERS FOR OPEN DATA HACKATHON AWARD - INDUSTRY AND UNIVERSITY CATEGORY

NO.	WINNER	GROUP	PRODUCT AND DESCRIPTION
1	First Place	TVA	**Product: CiTA (City Transit Apps)** **Description:** CiTA (City Transit App) is an application for transit users to get the latest information.
2	Second Place	KUDA API	**Product: Smart Fire Fighting** **Description:** Application that assist fire and rescue personnel in planning the right measures to be taken to address fire issues and reduce mortality and losses caused by fires.
3	Third Place	RT33	**Product: WeCare** **Description:** WeCare is an information product, "mobile assistant" and analytic data for open source to help homeless targeting groups including children, elderly, women, disabled, foreigners.
4	Fourth Place	DATA NEGARA	**Product: SmartChange** **Description:** SmartChange helps government to ease the burden of vulnerable group on toll charges.
5	Fifth Place	THE ROX	**Product: THE WHIZ - Experience the Smarter City** **Description:** Web app that help users to get information about wiFi location, parking status at the mall and attractive places in Putrajaya.

TABLE 6: WINNERS FOR OPEN DATA HACKATHON AWARD - SECONDARY SCHOOL CATEGORY

NO.	WINNER	GROUP	PRODUCT AND DESCRIPTION
1	First Place	CARBONARA	**Product: Carbonara Navigator App** **Description:** This application helps vulnerable groups like kids, teens and elderly people who need help in terms of health, safety or navigating unfamiliar areas.
2	Second Place	PANDA	**Product: Face Recognition** **Description:** This product uses cameras for face detection which is required by the police. By entering the location, police can predict the movement of criminals.
3	Third Place	OLIO	**Product: Blastoise** **Description:** An app that will blast notifications to travellers.
4	Fourth Place	PRO2O	**Product: PaperPlanes** **Description:** Upgraded tourism system that enables users to plan and organize their travel trips.
5	Fifth Place	VERNER CODERS	**Product: Sistem Statistik Jenayah Dadah Di Malaysia (SSJDM)** **Description:** This system is based on a web-based management and web-based statistical system.

The Open Data Hackathon 2017 Award Winners

7.0 RECOGNITION AND APPRECIATION AWARD

Public Sector CIO CONVEX 2017 also organized a recognition session for agencies that supports the implementation of Government ICT initiatives and projects such as:

a) Kumpulan Wang Amanah Pembangunan Projek ICT Sektor Awam (KWAICT);
b) Big Data Analytics (BDA) Coaching;
c) Digital Document Management System 2.0 (DDMS);
d) Government Brighton Awards;
e) Open Data; and
f) Test Design Competition (TDC) Softec Asia 2017.

List of award recipients are as follows:

TABLE 7: AWARD RECIPIENTS FOR SUPPORTING THE IMPLEMENTATION OF MAMPU ICT INITIATIVES AND PROJECTS

NO.	EXHIBITOR	AGENCY
1	Kumpulan Wang Amanah Pembangunan Projek ICT Sektor Awam (KWAICT)	• Internal Audit Division, Prime Minister's Department • Negeri Sembilan Health Department • Tengku Ampuan Rahimah Hospital, Klang • Teluk Intan Hospital, Perak • Putrajaya Hospital • Public Service Department • Kepala Batas Hospital, Pulau Pinang • Legal Affairs Division • National Anti-Drugs Agency • Ministry of Foreign Affairs • Public Services Commission of Malaysia
2	Big Data Analytics (BDA) Coaching	• Ministry of International Trade and Industry • Ministry of Education • Ministry of Finance • Ministry of Transport • Ministry of Energy, Green Technology and Water • National Audit Department • Public Services Commission of Malaysia • Research Division of the Prime Minister's Department.

NO.	EXHIBITOR	AGENCY
3	Digital Document Management System 2.0 (DDMS)	• Ministry of Finance • Ministry of Transport • Ministry of Energy, Green Technology and Water • National Audit Department • Public Services Commission of Malaysia • Ministry of Finance • Economic Planning Unit • Department of Islamic Development Malaysia • Public Service Department • Shah Alam Hospital • National Archives Of Malaysia • National Archives Of Malaysia, Perlis/Kedah • National Archives Of Malaysia, Pahang • Malaysia Deparment of Insolvency • Perak Health Department • National Sports Council of Malaysia • Yayasan Dakwah Islamiah Malaysia • Universiti Putra Malaysia • Malaysian Handricaft Development Corporation • National Archives Of Malaysia, Johor • National Archives Of Malaysia,Terengganu • National Archives Of Malaysia, Pulau Pinang • Selangor Water Management Authority • Perbadanan Kemajuan Pertanian Negeri Pahang • National Archives Of Malaysia, Sabah • National Archives Of Malaysia, Sarawak • Public Complaints Bureau • National Archives Of Malaysia, Melaka • Inland Revenue Board Of Malaysia • Federal Territory Islamic Affairs Department • National Archives Of Malaysia, Kelantan • Ampang Jaya Municipal Council • National Archives Of Malaysia, Perak • Selangor State Forest Department • Chief Government Security Office • Sultan Haji Ahmad Shah Hospital, Temerloh • Rubber Industry Smallholders Development Authority
4	Goverment Brighton Awards	• Public Service Department • Malaysian Administrative Modernisation and Management Planning Unit.
5	Open Data	• Penang State Secretariat • Kelantan State Secretariat • Perlis State Secretariat
6	Test Design Competition (TDC) Softec Asia 2017	• Kumpulan QUEST • Kumpulan BUGS SEEKERS

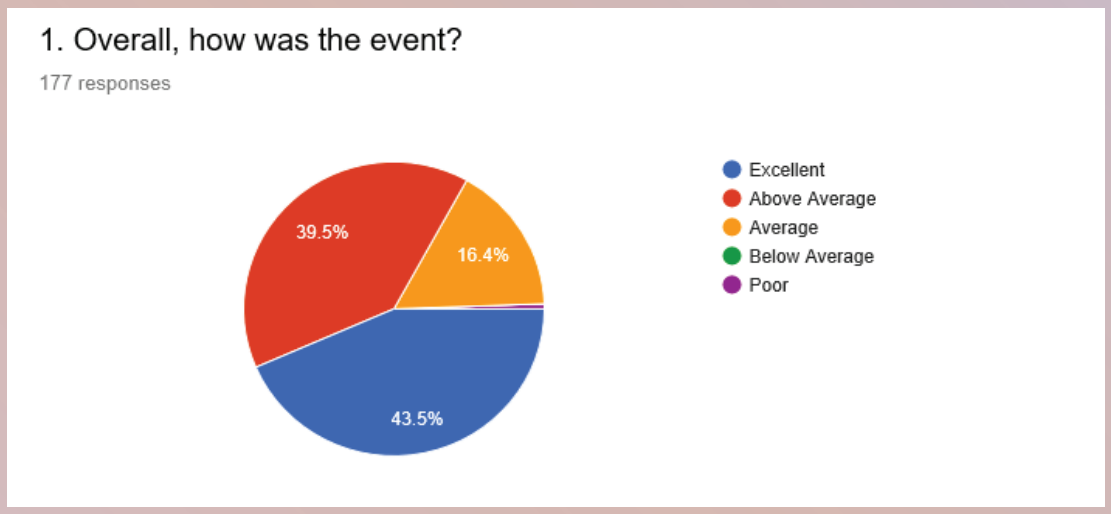
The Award Winners

8.0 EVALUATION AND FEEDBACK

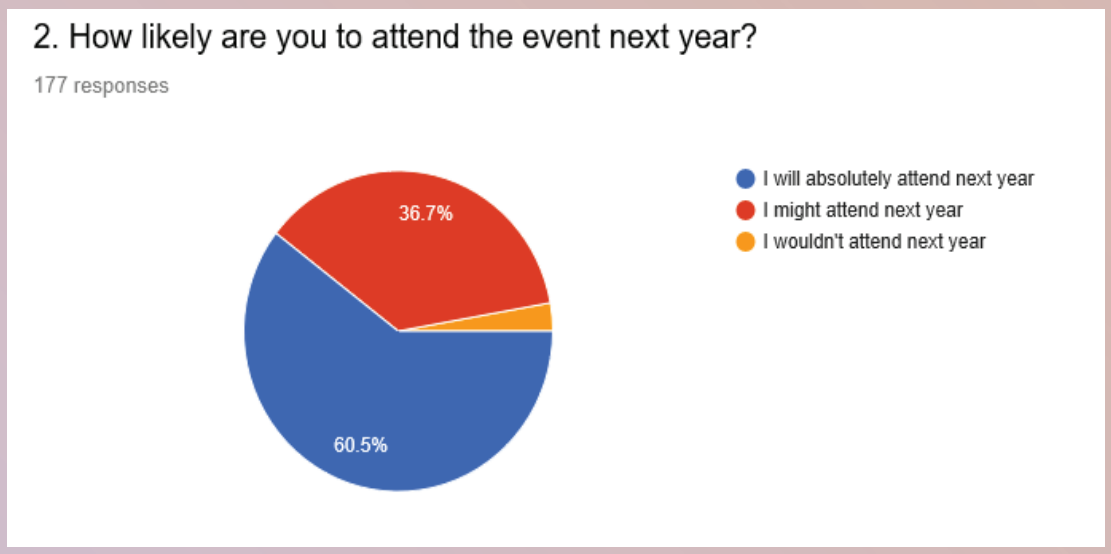
8.1 Feedback From Questionnaire

The online feedback from 613 participants of the PSCC 2017:

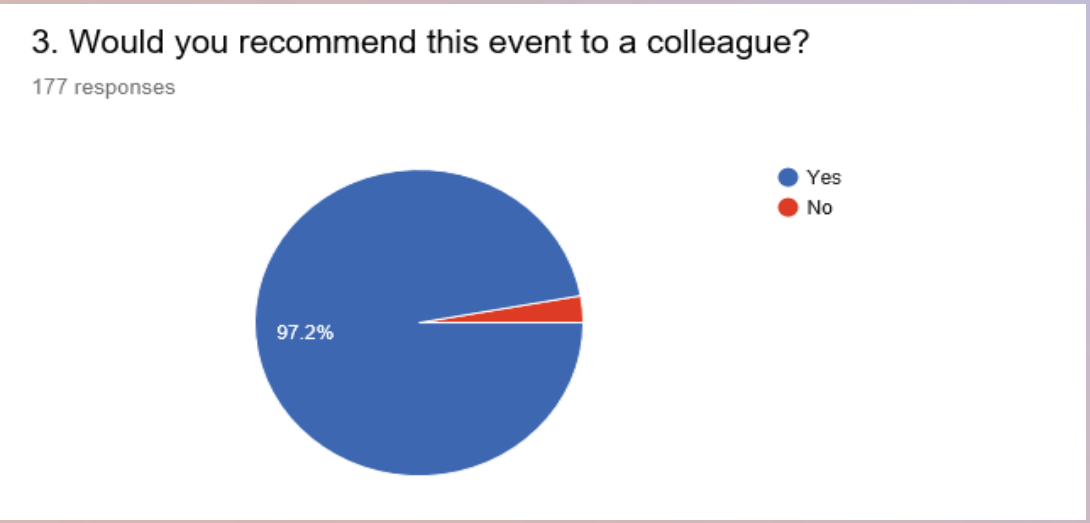
Question 1
43.5% of 177 participants agreed that this conference was Excellent.



Question 2
60.5% of 177 participants will attend this conference in the coming year.



Question 3
97.2% of 177 participants would suggest to their friends to join the conference.



Question 4
4. Please share any additional feedback with us. If nothing comes to mind, please enter N/A.

No.	Feedback from Participants
1	Allocate more time for panel discussion/presentation.
2	Organize workshop/research paper presentation from NGO/CSO/ government agencies for future conference.
3	MAMPU can invite more local government bodies to present.

9.0 CLOSING SPEECH BY DEPUTY DIRECTOR GENERAL (INFORMATION AND COMMUNICATION TECHNOLOGY) MAMPU

YBRS. DR. SUHAZIMAH BINTI DZAZALI
DEPUTY DIRECTOR GENERAL
(INFORMATION AND COMMUNICATION TECHNOLOGY) MAMPU

EXAMINING THE PILLARS OF DIGITAL TRANSFORMATION WITHIN GOVERNMENT

Background and Introduction

Malaysia has come a long way in the years since the inception of eGovernment in 1997. The implementation of eGovernment creates the starting point of a journey for transforming the government services by upending the way it operates, mordernises and enhances its service delivery.

From 2000 onwards, there are a plethora of online services developed and offered by agencies across the Public Sector that fulfill citizens and businesses needs. As of June 2017, the number of online services provided by government agencies for citizens and business community has reached about 88.5% (11,401) services.

We are pleased to learn that Global Information Technology Report 2016 has featured Malaysia as among the top five countries (China, Malaysia, Mongolia, Sri Lanka, and Thailand) in Asian region in terms of overall ICT readiness, and Malaysia has been ranked 31 from 139 nations for Network Readiness Index 2016. Under the Government Usage in the ICT aspect, the country was placed 6 out of 139 countries evaluated. The report also commented that the strong performance continues to be supported by a government that is fully committed to the digital agenda and is seen to be ahead of its peers in terms of adopting latest technologies. The careful planning and relentless pushing for proliferation and the use of the digital technology across all government ICT programmes have yielded profound results in elevating our public service delivery performance.

The Shift to Digital Transformation

As government worldwide increasingly become digital, digital technology plays a large role in service delivery. Just like any other nation, we have also come to recognise the beginning of the Fourth Industrial Revolution, i.e. the digital revolution which fundamentally

transforms the way the government deliver its services to citizens. The Public Sector has to equip itself to undertake the global digital landscape change and embrace the emergence of the **Fourth Industrial Revolution**. We need to establish the right environment that can catalyse the effort to digitalise our public service delivery initiatives just like how it affects tremendous change in the business and social scene right now. The sharing and collaboration practices of digital services are extended to transportation (Uber), hotels (Airbnb), financing (Kickstarter, LendingClub) and music services (Spotify) etc.

Similiar to other countries, we are actively fostering and helping many digital activities as it will be beneficial to everyone. An open exchange of information is a hallmark of a growing knowledge economy. All stakeholders - including governments, businesses, technical community, citizens, and consumers, play a role in building trust and confidence in global networks.

Thus as a response to Fourth Industrial Revolution, governments worldwide have either started or already put in place their digital plans, marking a decisive step towards digitalising most of its services to the citizens. In US, President Barrack Obama on May 2012, has issued a directive entitled Digital Government: Building a 21st Century Platform to Better Serve the American People with a 12-month action plan aimed at providing better services to citizens by delivering anytime, anywhere digital information and services to federal workers on any device, safely and securely.

In Malaysia, we are in the midst of formulating our government service delivery digitalisation plan which focuses on the implementation of digitalisation of service delivery systems that are seamless, accessible and citizen-centric. We are firmly on the path to becoming a digital-driven nation.

Key Strategies to Digital Transformation of the Public Service Delivery

Several key strategies to digital transformation of the public service delivery are:

a) Secured Integrated Digital Services

Integrated digital services across the wider public services is not only driven by efficiency, standardisation, consolidation, reduction in duplication and control cost, it also provides good opportunity in connecting the government to citizens and businesses as in a secured manner. We are now embarking on many programmes to support this pillar such as single gateway for public digital services based on Life-Events, end-to-end digital services, creation of digital ID to access government services, etc.

b) Data Driven Service Delivery

As digital information expands and becomes more complex, information management and process (data generation and digitally archived) has become more complicated as well. The availability and timely retrieval of data, plus analysis of related and unrelated information are crucial for government agencies in planning and developing policies, making decisions as well as gaining insights that can facilitate efficient government service delivery.

c) **Strengthening the Governance of Digitalisation of Public Sector Service Delivery**

MAMPU remains at the forefront in driving public service delivery strategies and directions across agencies nationwide. The key tools that affect our transformation of digital service delivery strategies have always been effective and updated policies, standards and clear guidelines. To strengthen the governance of Digitalisation of Public Sector Service Delivery, we can consider several approaches for example:

- Create a centralised strategic government digital service structure;
- Strengthen strategic collaboration network between government and private sector;
- Strengthen existing systems and data governance structure.
- The Public Sector ICT Strategic Plan (ISP) to continuously consolidate the management of service delivery standard and to standardise service delivery performance in the Public Sector.
- Build momentum in our effort in digitising key transactional services to deliver improved efficiency within the government and provide new digital services to citizens and businesses.

d) **Increase Capacity and Capability**

Citizen-centric service delivery usually at 24x7 service level, has led citizens to have high expectation of the government. Necessary ICT skills and resources must be made available to meet the needs of the Public Service. Government agencies are required to put greater emphasis on developing necessary digital capabilities and skills within their workforce to prepare for the digital transformation in public service delivery. Strengthening digital service delivery channels and platforms is critical to enhance service delivery performance.

Issues and Challenges

a) Increasingly, barriers to digital flows threaten to diminish the digitalisation's potential to drive positive social and economic impact. Although many government agencies have gained considerable momentum in building and digitise their services, there were also some key issues that need to be addressed by the government as a whole.

b) Issues concerning digital divide for citizens at urban and rural region. Access and infrastructure too require considerable development and investment to enable citizen to access services.

c) In addition, the escalating demands especially from the public are driving our government agencies to radically improve and transform their service delivery to meet the expectations.

d) Agencies need to undertake an array of changes in almost every aspect of its operation or streamline their operations to embrace ICT technology as a core component of its business.

Despite the widespread commitment to change or transform, many digital initiatives have not live up to expectations. In some cases, external constraints, such as shifting legislatives and long standing policies, have created

obstacles that stifled progress. Agencies' internal constraints also have hindered reform efforts for many governments.

Lack of staff competencies and capabilities, tedious processes and evolving technologies have undermined many well-intended transformation efforts. Hence, human resource development programme is needed with emphasis on managing people (not just technology and workflow) to attract and retain skilled workforce to be better suited to take on the new challenges.

Opportunities

The challenges in the implementation of digital transformation initiatives present a real opportunity to improve citizen and business engagement, increase internal and external collaboration, further increase efficiencies and improve the overall service provided to citizens and businesses.

10.0 PUBLIC SECTOR CIO CONVEX 2017 COMMITTEE MEMBERS

The Committee members involved in the Public Sector CIO CONVEX 2017 are as follow:

The Committee led by ICT Strategic and Architecture Development Division