



ICT SUSTAINABLE DEVELOPMENT REPORT 2015



Sultanate of Oman
Information Technology Authority



ICT Sustainable Development Report 2015

ICT AS CONSTITUTING TOOL FOR AND ENABLER OF PUBLIC SERVICE DELIVERY

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ABBREVIATIONS

CERT	Computer Emergency Response Team
CKC	Community Knowledge Center
G2B	G2B Government to Business
G2C	G2C Government to Citizen
HEAC	Higher Education Admissions Centre
ICT	Information and Communication Technology
ITA	Information Technology Authority
KOM	Knowledge Oasis-Muscat
MDG	Millennium Development Goals
MOCI	Ministry of Commerce and Industry
MoE	Ministry of Education
MoF	Ministry of Finance
MoH	Ministry of Health
MoHE	Ministry of Higher Education
MoCS	Ministry of Civil Services
MRMWR	Ministry of Regional Municipalities and Water Resources
NRS	National Registration System
OMR	Omani Riyal
NCSI	National Center for Statistics and Information
OSS	One Stop Shop
OWA	Oman Women's Association
PDO	Petroleum Development Oman
PEIE	Public Establishment for Industrial Estate
PACP	Public Authority for Consumers' Protection
PAMR	Public Authority for Manpower Register
PASMED	Public Authority for Small Medium Enterprises (SME) Development
PPP	Public-Private Partnership
R & D	Research and Development

ROP	Royal Oman Police
SAI	State Audit and Financial Institution
SCP	Supreme Council of Planning
SOC	Security Operation Centre
SQU	Sultan Qaboos University
SRC	Scientific Research Council
GTB	Government Tender Board
TKM	The Knowledge Mine
TLD	Top Level Domain
WSIS	World Summit on the Information Society

I. Introduction

Oman's journey from an underdeveloped nation more than four decades ago into a dynamic developing nation today is a great testimony to the visionary ruler, His Majesty Sultan Qaboos Bin Said. From a GDP of USD\$256.3 million in 1970, the country's GDP has increased to USD\$79.66 billion in 2013. Advancement's in the economy, livelihood, and education, as well as healthcare, has reduced the Infant Mortality Rate of 114 (per 1000 live births) in 1970 to 9.8 in 2013, representing a reduction rate of 11.6 times. Meanwhile, levels of literacy among women 15 years and above have also dramatically improved from 70.6% in 2003 to 80.6% in 2010.

Underlining the successful and vibrant economic activities is a pervasive Information, Communication and Technology (ICT) strategy for delivering effective delivery of public services. In Oman, ICT is key for achieving sustainable development in respect to building trust between citizens and the government. As government services come online, bureaucratic red-tapes has been replaced with people-centric electronic services promoting transparency and accountability for creating a level playing field.

The need for Oman to transform into a knowledge-based economy was emphasised by His Majesty whilst addressing the Council of Oman in November 2008, stating that "We have always emphasized the importance of learning and knowledge and we have always been open to the adoption of new developments in this field. Information and communication technology have now become the main elements that move forward the development process in this third millennium; therefore, we have accorded our attention to finding a national strategy to develop the skills and abilities of citizens in this domain with the aim of further developing eGovernment services. We are closely following the important steps that we have made in this regard. We call upon all government institutions to speedily enhance their performance, and to facilitate their services, by applying digital technology in order to usher the Sultanate into the constantly evolving spheres for applying knowledge."

Oman's ICT strategy is embodied in the e.oman strategy, providing the blueprint for the growth in ICT usage as well as connectivity. With a high mobile penetration rate of 156.73% and internet penetration rate at all-time high (Fixed Internet at 46.14% and Active Mobile Internet at 72%)¹ coupled with high PC penetration rate of 83% in 2013, eGovernment services has become prevalent, citizens and residents ability to communicate, interact and transact has radically improved in recent times.

In the Sultanate, ICT is transforming every aspect of government services. The Information Technology Authority of Oman, as the main custodian of the e.oman strategy, provides the stewardship to proliferate ICT as a constituting tool for and enabler of public service delivery. Rapid development in social media has been quickly absorbed by government entities to harness public feedback and responses. The State Audit and Financial Institution relies on such information to ensure government transparency and accountability. Additionally, the Supreme Council for Planning (SCP) is responsible for leading the planning process of developing the national development plan.

¹ Source: TRA Monthly Statistics – Feb 2015

This report document's the sultanate's achievements in using ICT as the constituting tool for and enabler of public service delivery to attain sustainable development goals.

II. Building and practising participatory governance

Building and practising participatory governance is one of the key components in attaining **Sustainable Development Goal 16**, outlining the need to promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

As connectivity and easy access to information become more rampant, building trust in the government require citizen-centric public administration delivered by capable public administrators, based on coherent policies that can enhance performance, and deliver decentralized solutions that can have a lasting impact in improving the life of citizens across the Sultanate. Transparency and accountability in the decision making process are key features for delivering meaningful citizen-centric public services. In this context, the Omani government has embraced eSolutions, open-government data, and social media as tools for enhancing Government to Citizens interactions. This, in turn, is accompanied by a robust cybersecurity strategy to protect from various threats associated with developing a knowledge-based society.²

Since 2011 the government has paid increasing attention to the needs for citizens to participate and play an active part in the future development of the Sultanate. As an example, SCP was formed with new leadership to start engaging the various stakeholders. The new strategy adopted a pro-active 2-prong approach to strategic planning, focusing on engaging the various stakeholders in the country, while at the same time seeking to better understand their needs.

The first approach emphasised face-to-face discussions between the different sectors in the country; whereas the second approach utilised ICT and the social media platforms to interact with the audiences through Twitter, Facebook, and convey messages through YouTube and sound cloud. Such tools enabled government organisations, policy makers and public officials to better interact with the public, thereby allowing individual citizens and communities to better express their needs, participate in and influence policy-making; comment on policy implementation; provide feedback on government services (on and off-line). Most importantly, it created a reciprocal process, whereby citizens were allowed to express grievances and suggestions for improvements in a constructive manner, which ensured that government agencies could directly address and improve its operations based on direct input.

By actively engaging stakeholders in the development of the national strategic plans for the country, the government has gradually started to win **the trust of its citizens**. Today, people are more comfortable sharing their views openly, as well as participate in the public debate which is clearly demonstrated by SCP and also the consumer protection agency in the Sultanate. Indeed, many people who earlier criticised the whole process, are now engaged in

² Source: <http://www.ita.gov.om/ITAPortal/ITA/strategy.aspx?NID=646&PID=2285&LID=113> - Digital Oman Strategy

sharing their opinions in a more constructive manner.³ Based on input from the citizens, SCP has been able to develop more relevant plans to meet the needs of the people in tandem with the economic development of the country. The new plans were more comprehensive and inclusive in taking into account the needs of society as a whole. As part of this, critical gaps in the planning were identified and addressed, taking into account the requirements and needs of different stakeholders' interest. As such, the conditions for social dialogue today are good, and typically bring together multiple stakeholders to muster broad support and loyalty. Consequently, the public has also been heard and considered a key player in realising the long term vision of Oman. Political and ideological disagreements were countered by creating the effective knowledge and idea sharing platforms through social media which was clearly demonstrated by SCP.⁴ Having said that, there are no perfect solutions for ensuring that everyone's voice is heard, but instead a constant learning process based on give-and-take, meaning compromise.

Even so, embracing technology and the power of social media has allowed the government to reach out to the desired target group for soliciting feedback on government policies, prioritise plans, and effectively implement eSolutions with strong support of the citizens. The social media has also been an effective tool for the government to engage the youth, constituting 70% (below 30 years old) of the FaceBook, Twitter and YouTube users. A good example of such an engagement was displayed during the SME Symposium⁵ which was conducted in January 2013, in which more than 30k viewers watched the proceedings in YouTube and posted comments and views online.

The multi-stakeholder collaborative decision making process in Oman has fundamentally improved the transparency of the government decision making mechanism. It also allowed the government to be able to improve the delivery of key services more effectively by conveying the right message to the right audience in the right place and at the right time. From the outset, the objectives were made clear to all the involved stakeholders, in particular, the participants received information about the involved procedures. It was also made clear who is accountable for what, and how redress is handled, and who should act on the outcomes. The dual approach has enhanced the responsiveness of the government to meet the demands and needs of citizens, including the inclusion of communities in public affairs. This, in turn, is due to the SCP team efforts to create consultative mechanisms using both face-to-face meetings and social media.

Although Oman is an absolute monarchy, His Majesty, the Sultan implemented the Consultative Council in a bid to develop the national democratic march. The Royal Decree No 94/91 was issued to establish the Shura Council on November 12 1991. According to speech His Majesty the Sultan, the Council was to develop on the principles of integrating proper Shura pillars, inspired from the heritage, values and history, while taking into consideration useful modern technologies and tools. The Royal decree on formation of the Shura Council marked the beginning of the parliamentary process in the Sultanate. It was aimed to

³ Source: Initiative for National planning and decision making through Public Involvement Report – Jan 2015 by Supreme Committee for Planning

⁴ Source: Initiative for National planning and decision making through Public Involvement Report – Jan 2015 by Supreme Committee for Planning

⁵ Source: SME Development Symposium Report Summary, The Firm 2013

strengthen the pillars of development by allowing citizens in each Wilayat to freely elect its members. Accordingly, it is the only legislative body in Oman of which all members are democratically elected.

ICT tools such as the electronic voting (eVoting) application using a mobile registration unit to register voters and verify the validity of the voters based on the 1-man-1-vote policy. In this way, citizens are able to elect the most suitable candidates to be represented by in the Council. ICT acts as a pillar to empower the citizens throughout the whole election process. Moreover, representatives of the Shura Council play a critical role in providing the checks and balances to government policies and plans. Good governance based on the symbiotic relationship between government entities such as the SCP, and the citizens represented through the Shura Councils, is the essence of achieving sustainable development in the Sultanate. In a similar vein, good governance is also sustained by using ICT for delivering every Government to Citizen (G2C), Government to Government (G2G) and Government to Business (G2B) interaction. Overall, such efforts strive to strengthen the public-private and public-civil partnerships, and together form the pillars of a sustainable development path in Oman.

III. Responsive public services

Effective public services is the cornerstone of good governance. The e.oman strategy provides the blueprint to transform Oman into a knowledge-based economy by leveraging on ICT to ensure sustainable development in the Sultanate. It provides an efficient infrastructure for connecting better public services to the people.

The eServices enable the government to find new and innovative ways to engage citizens in the delivery and improvement of public services. By leveraging on ICT, public service providers such as Muscat Municipality (MM) and the Ministry of Regional Municipalities and Water Resources (MRMWR) are able to create customer-centric solutions using mobile connectivity to interact, communicate and transact with the citizens. The MM eBuilding Permit application, for instance, is a good example of an online solution that has reduced the application process from 4 months to less than a week, and at the same time allowed citizens in the rural regions to access efficient municipal services without having to travel to main cities.

Consumers rights in Oman has also been strengthened, through the Public Authority of Consumer Protection (PACP) ICT application, which allow citizens to lodge complaints, and provide feedback and suggestions regarding any breach in relation to consumer rights. By empowering the consumers, PACP are able to empower citizens to become agents on the ground, providing tips of any fraud or violations. This allows PACP to immediately take actions based on such input, as exemplified in the following cases;

- i. PACP recently seized in excess of 27,000 KG of spoiled potato being collected from a waste dump and distributed to shops, restaurants and cafes as goods valid for human consumption
- ii. PACP recently stopped a company importing expired commodities, changing the production and expiry dates by using special procedures, and reselling them as new products

- iii. PACP recently stopped a company that re-manufactured expired and deposed tires and sold them to consumers as semi-new tires that had been used only for short period of time⁶.

All these cases, and others, would not have been identified if consumers had not reported suspicions or lodged complaints to PACP through the ICT applications. Coupled with swift actions from PACP, such products could have been detrimental to consumers' health and safety were intercepted and disposed of before being sold in the market.

A key outcome of the new eServices offered is the increase in information sharing between government agencies. Applications such as the National Registration System from the Royal Oman Police has provided citizens and residents with a databank. The information is shared with various ministries such as the Ministry of Manpower (MOMP) for the issue of employment permits, the Ministry of Commerce and Industries (MOCI) for their business registration application or Invest Easy, Ministry of Interiors (MOI) for eVoting. The aim of this is to move Oman from eGovernment to iGovernment (Integrative Government) services which streamline government processes further.

One area where such integrated services have been successfully deployed is manpower and capacity building. The Public Authority of the Manpower Register (PAMR) was established in 2011 to co-ordinate the human capital growth and development in the Sultanate. As part of this, Omanisation – the policy enacted by the government to replace expatriates in the workforce and create jobs for the locals – was prioritised as a means of tackling growing youth employment. PAMR is the custodian of the national manpower and employment in the Sultanate, including both job seekers of employable age and those already working.

The National Manpower Records and Registration System (NMRS) enable PAMR to keep records of Omani personnel and related work information to be collected. The system helps PAMR keep track of national manpower work movements, and training conducted in the private sector. This application assists the Omanisation percentage calculation and produces a report about the available vacancies in various occupations at different companies. The application also manages national manpower that work in the GCC region. So far, a total of **153K** jobseekers have registered with the PAMR by November 2013. The database includes about **55K** male and **98K** female jobseekers, and 68% of which are between 18 to 27 years old. By September 2013, about 60k of these jobseekers had been employed.⁷

The database also provides information about expertise in various sectors in the Sultanate, which could be easily referred to when needed and benefited from by various national assignments. The availability of concrete data and information about jobseekers allows PAMR to focus on enhancing HR planning policies, whilst implementing them in the local market.

The same data is made available to other ministries such as the Ministry of Civil Services (MoCS), managing about 140K employees across 31 ministries and government organisations in the Sultanate of Oman. From the pool of jobseekers, MoCS is able to select and seek out suitable candidates for various vacancies in the civil service. In addition, MoCS also manages the large human resources using an integrated Human Resource Management System (HRMS) which enables the ministry to administer and manage electronic HR transactions through

⁶ Source: Public Authority of Consumer Protection Mobile App Report - 2013

⁷ Source: PAMR Manpower Report to the Cabinet of Ministers - Dec 2013

interface with 31 government HR departments. This includes, for instance, the Manpower system, Financial System, Pension system and Civil Registration system. The most important feature is the Payroll Module linked to the Account Clearance House (ACH) System at the Central Bank of Oman. This module enable salary payments to be made promptly by the respective organisations through electronic means. The unified HR database has helped government entities obtain better services by being able to access online information, reports and statistics. Validations by the system have reduced the mistakes in all HR transactions.

A. Policy coherence

The formulation of policies and plans by the government apparatus, including SCP and its cascading entities, relies on ICT to ensure the maintenance of consistency and standards. Within the e.oman strategy, the governance aspect of ICT is embedded in the Oman eGovernance Framework (OeGAF), representing a set of standards/best practices and process management systems to enhance the delivery of Government Services in alignment with the objectives of e.oman. OeGAF serves as a guide to the development, deployment, and operations of Information Systems of the Oman Government entities. OeGAF contains the principles, strategies and building blocks that support the goals of the government. The architecture can direct the selection, use and operation of technologies needed to support government business requirements and delivery of services. The architecture can reduce the time and cost of deploying applications, while making it easier to integrate information and services. OeGAF is intended to help the Government to act as an “Integrated Enterprise” and manage IT as a strategic investment, thereby ensuring consistency in the framework across all government entities. OeGAF consists of four main architectures: Business, Solution, Information, and Technical.

Transforming the public services into paperless integrated electronic services across all government entities requires a whole government type of approach. Streamlined processes eradicate duplicates, redundancies and bureaucratic red tapes and encourage the whole of government approach is one of the key objectives of the eTransformation Plan, which is the impetus to spearhead the e.oman strategy to the next level. The eTransformation Plan is designed to increase the utilization rate of e-government services and moving Oman from eGov (electronic Government) to iGov (integrative Government). It is characterised by rapid transfer of knowledge, both from within organisations and across sectors; the use and participation of ICT at every juncture, including increased involvement of IT in the business process and speed of decision-making. As citizens have embraced the eTransformation strategy, digital literacy has dramatically improved, as well as enabled a functioning ICT infrastructure in the country. By end of December 2014, about 70% of the 84 government entities had formulated their respective eTransformation plan, encompassing the following objectives;

- Redesign and streamline processes and procedures to ensure greater efficiency and transparency
- The use of information technology to automate and develop the government's actions
- Achieve cooperation and coordination between governmental institutions in the development, integration and provision of electronic services
- Achieve a significant increase in the provision of integrated electronic services
- Give priority to the implementation and modernization of infrastructure required

- Ensure compliance with the standard technical specifications for the government
- Design applications and services on the basis of a unified and integrated model is applied to all government units
- The development of electronic applications in a way that allows them to carry out the necessary changes when needed
- Compatibility business continuity plans and technical systems with business continuity requirements at the national level
- Identify the needs of government units of systems and applications to enable business continuity by procedures
- Commitment to implement policies and standard specifications and procedures related to information security.

This is an essential step to information sharing, as well as creating an effective decision making process, ensuring policy coherence in every aspect of government services. The government entities utilise the eTransformation plan to improve the quality of public services, not only in the cities, but also in the rural regions.

B. Performance management and impact measurement

Oman is developing a set of key performance indicators on the impact of ICT delivery of government services, which is currently being evaluated by individual government entities. The current evaluation of electronic services is conducted by individual government entities based on their respective e-government services. Muscat Municipality is an example of a government entity that has successfully implemented key performance indicators to measure customer-centric services.⁸ Muscat Municipality is a government body responsible for providing quality services to almost a million citizens and expatriates living in the Muscat governorate. As a customer-centric organization, Muscat Municipality deliver ICT solutions between G2G, G2C and G2B services.⁹ The Contact Center facilitates the flow of services' information from customers to Muscat Municipality through various channels. By using direct communication with the customer, the Center becomes the conduit in which the municipality can monitor public comments and at the same time evaluating the organisation's performance.

The MM Contact Center main focus is to gather feedback and complaints from customers to achieve higher service quality through a seamless workflow in an integrated environment. Muscat residents, citizens and businesses can pay permits and fines from mobile devices, obtain building permits online in less than a week, and provide feedback on municipal services. During the period from the launch in November 2010 until September 2012, the center has received about 24k feedback/complaints. A total of **22k** of these were resolved, thus indicating that about **94%** of the feedback and complaints were acted upon and resolved. Consequently, customer satisfaction has increased, while the municipal services in Muscat Governorate has improved in this period.¹⁰

⁸ Source: <http://www.mm.gov.om/Page.aspx?PAID=5#Details&MID=5&PGID=239>

⁹ Source: <http://www.mm.gov.om/Poll.aspx>

¹⁰ Source: Annex D - Number of feedback complaints received by Muscat Contact Center from 14 Nov 2010 to 1 Aug 2012, Customer Satisfaction report Dec 2012.

The Royal Oman Police (ROP) is another government entity integrating customers' feedback as an indicator to enhance the service quality. The concept of ePolice leverages on eGovernment services by utilising electronic means of interaction with citizens. ROP led the way towards eGovernment by developing eServices for essential service delivery through their web portal. The ROP webportal offers multiple ePolice services that enable citizens and residents both inside and outside Oman to access a wide range of user friendly services. The main online services include traffic offense payment, online visa application, visa status enquiry and lost documents. Since the launch of online payment services for traffic offences in 2008, the amount of traffic fines collected online is around 60.6 million OMR (USD 157.6 million), an increase of 7% compared to manual collection. In addition, with the introduction of online visa applications, a total of 10.5 million applicants has applied for a visa online (new and renewal) between July 2008 and the end of 2011. The eVisa services include the application and approval of employment visa, travel visa, housemaid visa and business visa. In 2011, about 426k visa applications were done online from overseas applicants. These applicants can also check the status of their applications online. Finally, the lost document service is another eService provided by ROP through ePolice. It allows users to report lost documents such as passports, driving licenses, etc.

C. Decentralization

Oman is vast country of 309,500 square kilometres, divided into 11 administrative regions and governorates. Each of these governorates has its own distinctive administrative, geographical and economic significance. Each region and governorate is further divided into smaller districts known as Wilayat. In all the Sultanate has 61 Wilayats. The Ministry of Interior is responsible for overseeing the governorates with the exception of the Muscat and Dhofar Governorates. HM, Sultan Qaboos appoints the governors of each governorate while the Wali (local governor) of each Wilayat is responsible for the local administration and acts as a link between the government, its institutions and the public.¹¹ Apart from the governorates of Buraimi, Muscat, Musandam and Dhofar, the 7 governorates have about 44 districts. The government, based in Muscat, has established regional offices in the respective regions. Despite decentralisation, the SCP together with other government entities ensures that each region develops based on their unique geographical position, natural resources and economic activities. SCP in 2014 formulated the Musandam Strategy 2040 based on a consultative approach to develop the Governorate of Musandam as a touristic hub. Based on the national development plan, this unique approach ensures that each region develops economically.

One concrete example of eGovernment services that has transformed the way citizens and businesses communicate with the government, is the Ministry of Regional Municipalities and Water Resources (MRMWR) one-stop municipal services concept of the Injaz (Achievement in Arabic) Hall to house all the municipal services under one roof. Applications and approval processes were streamlined and standardized through all the municipalities. The Injaz hall was officially launched in 2008 in all 44 municipalities. The services available at the Injaz Hall include building permit application, municipal licenses application linked to the income module for payment. This initiative has ensured that government policies implemented in the capital areas are consistent in the rural regions as well. Streamlining the processes has further ensured that information is shared across the regions, as well as the Head office in the capital city. This has been essential for providing accurate and reliable data to the national development plan in the 8 governorates. Without a doubt, standardized information from all

¹¹ Source: Oman 2014/15, Ministry of Information, pg 23-26

municipalities, data collection and knowledge sharing has simplified processes, whilst allowing accurate data to be used in further planning and strategic development in MRMWR and the SCP.

IV. Civic education

Education plays an important role in proliferation of civic rights and engaging the Omani youth in playing a key role in creating a sustainable future for Oman and in line with attaining the **Sustainable Development Goal 4** - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Oman has one of the highest literacy rates in the GCC region, with 99.3% of the youth between 15 to 24 years at all-time high literacy rate.¹² Having more than 1500 K1-K12 schools, civic education is embedded into the core curriculum in the education system. The educational sector has made strong consistent progress, while maintaining traditional values since the 1970s. During this time education has been a priority sector for the government, taking the Sultanate from the era of the “kuttab” (traditional Qur’an school) often conducted under the shade of a tree to the high tech university age.

SCP set the bar by creating collaborative relationships with the youth via new media. Social media tools were used to extract ideas from various target segments in which participants were encouraged to discuss and exchange views in a civilised and organised manner. As a result, the youth assisted the government in setting the priorities for what should be included into the national development plan. In so doing, every segment of the society was involved in the national development plan. Today, it has become an institutionalised mechanisms to channel the demands and views of citizens in a consultative manner, leading to more effective government policymaking and implementation, as well as holistic and “horizontal” approaches to public service delivery and management. One of the key results from such exchanges between the civil communities and civil servants is the formation of the Public Authority for Small Medium Enterprise (SME), an authority responsible for the development of SMEs and addressing concerns regarding entrepreneurship in the country.

Similarly, special needs of particular groups like, for instance, women is part of the E-Inclusion strategy, thereby ensuring that no member of the community is left behind. This is achieved by making efforts in promoting ICT that can enables access to information and services, resulting in equal opportunities for seeking employment, participate in social activities and improving quality of life. The e.Oman vision encompasses every member of the community in comprehensive ICT-based development programs. Besides all the community-centric projects, it also entails plans and exclusive projects with special consideration to the needs of different groups within society, including children, women, older and disabled-people, rural minorities and others. Non-Profit Non-Government Organisations such as the Oman Women Association plays a key part in ensuring that women have equal opportunities to education and skills development that can prepare them for various job opportunities.

¹² Source: <http://www.uis.unesco.org/Education/Documents/literacy-statistics-trends-1985-2015.pdf>

A good example of such an initiative is the Community Knowledge Center's initiative, which allows remote areas of Oman with a small populations to play an active part in the digital development.¹³ In this set-up, older people are assured access to healthcare facilities, as well as access to online information. This makes it possible for people with special needs to live an independent and dignified life by using assistive technologies. The entire population has access to the internet independently of location.

V. The multi-stakeholder approach and inclusiveness

A multi-stakeholder approach involves every aspect of society, not only in the capital areas, but also the outlying regions, the Governorates' governors, NGOs, the private sector, academics, entrepreneurs, leaders of tribes, regional government employees, consultants, media, women associations, women home trading, and students, among others. To facilitate such interactions, SCP has to create an open and transparent platform, in which citizens and government can interact and collaborate in an effective decision making process. Initially, this was very difficult, as it required a complete mindset change from government employees in being receptive to criticisms and being accountable for decisions. To achieve such goals, the government arranged regular meetings with different stakeholders to play an active role in transforming government agencies. By engaging a wide range of stakeholder in the planning process, it was able to muster strong loyalty and support for the plan. At the same time, the appropriate stakeholders were also involved in solving problems and issues in the different governorates. Presently, national planning has become a national wide phenomenon instead of just a silo engagement, where champions have been identified to support the various causes.

Apart from the SCP, the State Audit and Financial Institution (SAI) also has an interesting mechanism assisting them in performing tasks efficiently. By using an automated eForm on the SAI portal, the organisation was able to obtain feedback and document complaints from the general public. Based on such feedback and complaints, the SAI could carry out specific audits and investigations to weed out corrupt practices. The regulated audits carried out by the new SAI and public feedback, citizens and residents can now confidently alert the SAI of any wrongdoings in relation to any public services, government-owned organizations and private companies. At the same time, these combined feedbacks from SAI and the public highlights weaknesses in each organization's performance. A total of 377 audit assignments targeted at identified malpractices were carried out based on complaints from July 2011 to July 2012, resulting in 35 cases being brought to justice and a sum of about 340 million OMR paid out.¹⁴ In this process, citizens have become a partner in ensuring transparency and efficient government. In turn, the public's trust in the government has been boosted, as corrupt practices were eradicated in these cases. In addition, their complaints and feedback are now properly recorded, handled and monitored, providing assurance that the government takes the feedback seriously and is working towards protecting public funds.

¹³ Source: <http://www.ita.gov.om/ITAPortal/Pages/Page.aspx?NID=791&PID=3121&LID=151>

¹⁴ Source: "RO 340m funds retrieved", Oman Observer, 24 December 2012, Pg1

Non-Government Organisations (NGOs) in Oman under the auspice of the Ministry of Social Development form the base of informal institutions in the country. Table 1 provides the details of NGOs in Oman. NGOs, such as the Oman Woman Association (OWA), take an active role in bridging digital literacy through adopting the Women in Technology program and the Community Knowledge Center (CKC) initiative.

Table 1 – Details of Non-Governmental Organisations (NGOs) in Oman

Name of NGO	Target Group	Source of Funding	Branches	Members
Oman Women association	Women	Ministry of social Development	52	4908
Societies and Charity organizations	Community development through Charity work (Visually impair, Cancer enlightenment, social solidarity, ... etc)	Ministry of social Development, citizens	10	1103
Children handicapped association (Centers)	Handicapped children	Ministry of social Development	11	431
Early intervention for special need children	Special needs children	Ministry of social Development	1	128
Vocational societies			20	5035
Colonies clubs			10	2869

Source: Strategic Planning Department, Ministry of Social Development 2011

Under the eInclusion policy¹⁵, Oman has embraced accessibility procedures for people with disabilities, as well as elderly people, providing them with fair and equal opportunities through a number of eServices. In parallel, private sector institutions have eAccessibility policies in place, which are regularly monitored.

In the e.Oman strategy, capacity building programs are strategically planned and implemented through the National IT Training and Awareness (NITTA) initiative. One of the key components of the NITTA is the Community IT Training aiming to provide IT literacy to the entire population. Community training is delivered via the Community Knowledge Center (CKC) and the Women Community Knowledge Center initiatives. The centers are equipped modern equipment as well as internet services, and provides access to certain educational programmes. Since its inception in 2009, there are a total of 19 (10 CKC and 9 WCKC) centers implemented in different governorates and Wilayats. The establishment of Women Community Knowledge Centers ensures that women are not lagging behind in the digital age, which is closely aligned with ‘Sustainable Development Goal 5 - Achieve gender equality and empower all women and girls’. To date more than 50 trainers has been trained as part of the digital literacy programme for the communities and about 34k citizens trained on digital literacy. Approximately 70% of those trained are women from remote regions of Oman. Furthermore, a large number of the citizens also visit these Centers to gain access to information and electronic services that would otherwise be difficult to access for those living in peripheral areas.

¹⁵ Source:

http://www.oman.om/wps/portal/!ut/p/a0/04_Si9CPykssy0xPLMnMz0vMAfGjzOKDvbydgi1NjAwszELNDDxDvQND3NwMDA0MzPwDU_P0C7IdFQHJ46k0/?WCM_GLOBAL_CONTEXT=/wps/wcm/connect/EN/site/home/gov/gov12/gov1203/

In a speech in 1993, HM Sultan Qaboos emphasized the important role of Omani women regardless of where they participate in the society. With HM laying the foundation to eradicate discrimination against women in Oman, the government has strived to remove all forms of discrimination initiatives aiming to empower women in a variety of different fields. In May 2005, Oman ratified the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW). A committee was formed to follow-up the execution of the provisions of the CEDAW after accession.

Today, Omani women perform a vital role in society. Oman has felt the impact of women's efforts in the work force, while maintaining traditional roles as mothers and housewives. Needless to say, they are considered essential for preparing future generations with Omani values and traditions. In the academic year 2011/2012, there were 1446 (government and private) schools offering K12 education in Oman. A total of 589K students were enrolled with about 280K or 47% female students. Female teachers constituted 75% of the teaching faculty from a total of about 35k teachers. In Higher Education, female students constituted about 47% in various government and private institutes of higher learning in the Sultanate.¹⁶ This is a clear testimony to HM's vision and actions to empower Omani women to participate in the knowledge-based economy.

The government also provide teachers with a wide range of ICT skills and competencies to assist children with special needs. Under this plan, the Association for Disabled Children is equipped with appropriate ICT tools and skills for ensuring that the person can be fully integrated into society with the same opportunities.

Leveraging on an electronic payment infrastructure and a multi-stakeholder approach, the government launched the online donation portal. The Donations Portal for Charitable Organizations receives donations from citizens, private enterprises through the ePayment Gateway. The donations are subsequently relayed to participating charitable organizations, including: Al Noor Association for the Blind, Early Intervention Centre, National Association for Cancer Awareness, Omani Society for the Disabled, Association for the Welfare of Disabled Children, and Environment Society Oman. The Donation Portal has so far achieved its main objective of assisting charitable organisations in raising the donation fund for the less privileged and people with special needs. It also serves as a place where information about the charity organizations in Sultanate of Oman is readily available. When it was first launched in 2009, the portal recorded 232 transactions with 2,362 OMR collected. Donations via the portal increased to 48K donations in April 2015 with a collection of about 1,156,418.46 OMR.¹⁷

VI. Information and communications technologies as constituting a tool for and enabler of good-quality public service delivery

¹⁶ Source: Oman Statistical Yearbook - 2013

¹⁷ Source: <http://www.donate.om/donationsportal/home/default.aspx>

The delivery of good quality public service requires several enablers; pervasive ICT infrastructure, protection and security, users' IT savviness and quality eServices which meet the needs of the customers. This dovetails with **Sustainable Development Goal 9** - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. ICT infrastructure includes; strong internet communications platform riding on network access technologies such as fixed line, mobile cellular, wireless terrestrial and satellite. At the end of February 2015, there were total 185,606 fixed internet subscribers including Dial up, ADSL, and WiMax. There are a total of 2,890,635 Active Mobile Broadband Subscribers, thus making mobile internet connectivity the highest in the Sultanate.¹⁸ In addition, the e.oman strategy put in place several major infrastructure projects such as: the Unified Government Network, National Data Centre, ePayment, Cybersecurity as well as legal and regulatory policies. All these initiatives provided the foundation for a robust and sustainable information superhighway in the Sultanate.

PC Penetration Rate

With the growing number of smart phone devices, mobile connectivity is essential to internet connectivity in the Sultanate. Despite mobile telephone equipment is available and use is high (150% of mobile penetration rate per inhabitant for mobile internet services), indicators for ICT access and use are not as strong.¹⁹ Among the GCC countries, Oman ranks the lowest with a broadband subscription rate of just 2.7 per 100 inhabitants. The cost of connection is another key factor in broadband usage. In this case, the prices charged by Oman's telecommunications providers, is higher than those of neighbouring countries.²⁰ The PC penetration rate, however, has continued to increase to 80% for households and individuals in 2013. This is an increase of about 63% from the 2003 population census up to 2013.²¹

Cyber Security and ICT Law

In terms of IT Law and Cybersecurity, the Information Security Division (ISD) is one of the e.oman key initiatives. It aims to address security risks and build information security awareness within the Sultanate. The ISD provides a wide range of information security related services. The ISD services add high value to the state institutions through providing security support for eGovernment services both technology- and knowledge-wise. The information and data, applications, systems and networks are considered of high value and therefore protected from intentional damage, negligence, natural disasters or technical failures. ISD provides security services to governmental agencies and institutions according to best practices to guarantee information confidentiality, integrity, and access. To spread awareness about information security among government agencies and institutions' employees, ISD also conducted several activities, including seminars and workshops on themes such as information security management systems, risk management, business continuity management, and post disaster recovery.

Oman's National Computer Emergency Readiness Team (OCERT) is another key e.oman security initiative. OCERT analyses and treat information security incidents on the internet, while at the same time ensuring that information security awareness and culture is nurtured among different social groups in Oman, including both communities and institutions. The center provides timely accurate data on threats and risks, while also creating precautionary

¹⁸ Source: TRA Monthly Statistics – Feb 2015

¹⁹ Source: SRI International (2011). Oman's National Innovation Ecosystem – An Assessment

²⁰ Source: UNCTAD (2014). Science, Technology & Policy Review Oman. United Nations Publication

²¹ Source: Sultanate of Oman Progress Report on Information Society 2003 - 2013

measures and steps to avoid or minimize exposure to security threats. The center also conducts specialized courses on Information Security such as wireless networks security, protecting children in the Cyber Space, Emergency and Business Continuity plans, and judicial templates for cybercrimes.

Oman's digital society initiatives require wide legal protection for all official and personal electronic transactions. The eTransactions Law was promulgated by Royal Decree 69/2008. The law addresses key issues such as: legality of eTransactions; Intellectual Property Rights (IPR); taxation; data protection; legality of e-signatures and emails; and the validity of ePayments, in addition to issues pertaining to emails, privacy and security.

In 2011, the Cyber Crimes Law was promulgated under Royal Decree No. 12/2011 as the first integrated law curbing IT crimes. It was declared to complement and crown the great efforts exerted by the Sultanate in all its units and agencies to address IT crimes. The promulgation of this law was the result of a great effort of research and study of international experiences spanning more than two years.

eGovernment Services Portal

The Official eGovernment services portal²², launched to the public on 25 May 2009, acts as the main gateway to electronic services offered by the government, allowing both citizens and businesses to access government information and services online. These services may be provided via the portal either by integrating with other government entities or providing links to their websites. The portal can be accessed through multiple channels such as the web and mobile devices. Navigation on the portal site is simplified through a live event service delivery model and searchable content.²³

Until today, Omani citizens has benefited from quality eServices from various government entities, including healthcare, education, voting, consumer protection, national registration services, land allocation services, eRecruitment, and many more. In the educational sector, the Education portal functions as an integrated IT-based application to support learning, teaching, administration and communication with the various stakeholders. The Portal provides an electronic link between schools, the regional educational directorates and departments, and the Ministry, enabling them to transfer and exchange plans, programs, data and statistics. It is one of the most extensive eGovernment initiatives in the Sultanate, covering more than 1000 schools. The Education Portal becomes the defacto platform for communication between the parents and teachers as well as between students and teachers.

eHealthcare

In meeting the Sustainable Development Goal 3 - Ensure healthy lives and promote well-being for all at all ages, the Al Shifa Health System from the Ministry of Health (MoH) is one of the most advanced eGovernment applications being used in the Sultanate. Al-Shifa is a comprehensive healthcare information management system, developed as a complete solution for a healthcare facility management from electronic medical records to Assets, Inventory, FA, and HR management. This system has been installed in 200+ healthcare facilities of varying size and capabilities, including several non-MoH caregiver facilities. A fully integrated and easily accessible EMR that provides 360 degree view of the patient history and clinical information needed for a point-of-care is the most crucial component of Al-Shifa. The

²² URL: www.eoman.gov.om/www.oman.om

²³ Source - ITA Annual Report 2006-2007, pg 24

system captures all aspects of patient information that has clinical significance, from a patient referral/walk-in to the healthcare facility, to the discharge from the facility after the required care is delivered to the patient through a set of inpatient and outpatient services. A completely integrated computer based order entry system (CPOE) is used to integrate all service departments to provide systematic and coordinated care delivery. This makes it possible to computerize hospitals, and integrate and review all information relating to patient care and operations.

The most significant impact of such a system is through the Mother and Child module. The module focuses on providing a holistic primary care for pregnant mothers (pre-natal and post-natal care) at all medical centers and towards birth at the tertiary hospital. The main objective of this module is to reduce childhood mortality, illnesses, and disabilities, and to contribute to the improved growth and development of children in Oman. Oman has achieved the 4th MDG and managed to reduce Childhood mortality rate for under 5 years of age from 181 per 1000 live births in 1970 to 12 in 2009. Infants' mortality rate reached 9.5 per 1000 live births in 2011 compared to 118 in 1970.²⁴ This project was recognized by UNICEF in the middle of 1990's for continual reduction of child mortality. In 2012, this project was awarded 2nd Prize in the UN Public Service Award in 'Promoting Gender-responsive Delivery of Public Services' category.

In addition, every Omani woman has access to antenatal care services, which are offered in all parent institutions after a confirmed pregnancy. Oman has also been successful in reducing the maternal mortality rate in childbirth from 27.3 (per 100,000 live births) in 1991 to 15.9 in 2011, a reduction of more than 205%.

eRecruitment

Capitalising on the high mobile penetration rate, the Ministry of Civil Service (MoCS) introduced a new system of recruitment, utilising the Short Message Service of the mobile phone. In August 2007, the new recruitment system using SMS was introduced, allowing job seekers to apply for jobs in the Civil Service by sending an SMS with their Manpower Registration Number and the corresponding job identification number published in the advertisements. The integration Ministry of Manpower and National Manpower System has resulted in the possibility to validate the applicants' data in seconds. Consequently, the job seekers can apply for jobs in the Civil Service, thereby eliminating the need to travel to the capital for submitting the applications and sit for the entrance examinations. The whole recruitment process is reduced from 11 months to less than one month. The MoCS saved around 459,172 OMR and the rest of the recruiting ministries 707,553 OMR yearly from cost of advertisements, transportation and manpower.

National Registration System

The unique registration number in the identity card or resident card has become a salient feature used to verify the individual's identification as part of accessing eGovernment services in the eOman portal. The card can be used as an ePurse for storing credits used in ePayment's. By scanning the ID or Residence Card, users can clear the passport section easily at the Muscat International Airport. Another important application of the ID card is in the Consultative Assembly (Majlis al-Shura) election, where mobile units are used to install the eVoting application in the Omani ID cards for allowing voters to use their ID cards in the election process. Among the available features, new voters can be registered, instant installation of an electoral applet can be managed, as well as registering the voting location. This process

²⁴ Source – Oman Statistical Report 2010 and 2012

ensures transparency in the electoral process, while maintaining the integrity of the user. As of January 2015 all government hospitals and health clinic use ID cards instead of hospital cards.

The Mobile Registration Units (MRU) were established to provide national registration services to people living in remote areas. At the end of 2010, the total Omani males holding ID cards were 995k, representing an increase of 70% from 2008, whereas females holding the card amounted to 593k, an increase of 66% from 2008. At the moment, MRU continues to offer its services and collection of vital events (birth and death), as well as issuing ID and resident cards. MRU issued 35k IDs cards for Omani female from 2009-2011, registered 16k births and 320 deaths. In June 2009, the Civil Status System (National Registration System (NRS)) received the prestigious global UN Public Service Award 2009 for improving the delivery of service.

Consumers' Protection

As previously mentioned, the formation of the PACP signalled the governments' recognition for the importance of consumers' sovereignty and need for protection. Part of the task was to educate consumers on their rights. The joint effort between the consumers and PACP has allowed over 3,000 complaints reported and 2,400 resolved on average per month. This practice provides PACP with tools for constantly measuring consumer awareness and satisfaction. The sustainability of this initiative has been secured through regulatory acts and related policies to enforce consumer rights. This has been accompanied by a public awareness programme targeting major events, trade shows and traditional media channels. PACP gradually increases the number of commodities that should be monitored, and publishes the price as part of a price index available through a mobile application. PACP also plans to integrative such services with other government entities like, for instance, Muscat Municipality and MoCI. In this way it would be possible to automatically receive contact details, GPS coordinates, owner details, license details, and other relevant details of vendors.

eTendering System

The eTendering system is a solution that allows both local and international companies to procure government tenders. The system has effectively centralized the procurement management process to enhance transparency and accuracy in the government procurement process. Another key application for businesses is the One-Stop Shop (OSS) from MOCI. The OSS enable investors to set up companies in Oman, thus minimizing paperwork and saving costs and time. All applications and governmental processes involved in company registration and approval requests is conducted online through the eGovernment Services Portal. The Portal is a single-entry access point for OSS services. The OSS success can be attributed to the fact that it has minimized the number of visits needed to complete the registration processes. In the next step, the plan is for such services to be paid online. Prior to the OSS initiative, MoCI handled about 9k commercial registrations. However, in 2011, MoCI handled and approved about 20k registrations, representing an increase of 122%. During the period of June 2006 to December 2011, approximately 128k applications were received and completed, of which approximately 71% were processed and approved within 1 hour and the rest completed within 3 working days.

One Stop Business Registration

One of the most interesting outcomes of the OSS is the decentralisation of the commercial registration services to the rest of the regions via the SANAD (Self-Employment and National Autonomous Development) – IT Enabled Service Centres. The centres are responsible for

creating gainful employment and business opportunities for the nation's youth by delivering ICT enabled services from Government and corporate to public, electronically. The Sanad Service Centres program is considered to be a highly visible nation-wide initiative. Currently, there are more than 600 SANAD offices throughout the Sultanate. In addition to commercial registration, the SANAD centers also process the work permit visas for expatriate workers via the Manpower Registration System. The data mined from the system is shared with other government entities and used to analyze trends for predicting manpower requirements in the Sultanate. Likewise, the data is also utilised for deciding upon Omanisation targets set by the government based on statistical data. The 'Manpower Registration System' won the prestigious 2010 UN Public Service Awards in the 'Improving the Delivery of Public Services' category.

Statistics Online

The increasing awareness of the importance of statistics and its many uses, has led many government entities in the sultanate to cover data collection, analysis and statistical bulletins and reports. The National Statistics Online is a flagship project and aims to present socio-economic indicators in a dynamic and graphical manner based on a large number of different criteria's and timeline's. Oman Statistics Online is a free-access online database with quality data compiled and published periodically by the competent authority. Key economic and social statistics are available online and on a mobile app from the National Center for Statistic and SCP.

Innovation and Entrepreneurship

In regards to '**Sustainable Development Goal 8** - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all', the ICT sector in Oman is still relatively new and developing. The growth is spearheaded with the implementation of the e.oman and eTransformation strategies. Foremost are the ITA initiatives, SAS for Entrepreneurship and SAS for Virtual Reality initiatives²⁵, aiming to provide the foundation for creating a new and vibrant ICT industry, thereby fostering an entrepreneurial spirit in the ICT sector in Oman. The programme is based on a Public Private Partnership Model aspiring to foster ICT enabled SMEs. The programme contributes to the development of an internationally competitive ICT industry, self-employment and new job creation, as well as the introduction of new technologies to create innovative products, solutions and services, SAS for Virtual Reality leverages on immersive technologies to boost innovations and competencies in the digital media sector in the Sultanate. With support from the government agencies and private sector organisations, young start-ups are given the opportunity to take their ideas and venture to become technopreneurs.

VII. Sustainable Development Goals

Oman has successfully leveraged on ICT to attain Sustainable Development Goals 16 and 17.

²⁵ Source: <http://www.ita.gov.om/ITAPortal/Pages/Page.aspx?NID=675&PID=2475&LID=124>
<http://www.ita.gov.om/ITAPortal/Pages/Page.aspx?NID=994&PID=4185&LID=196>

- **Goal 16** - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
- **Goal 17** - Strengthen the means of implementation and revitalize the global partnership for sustainable development

This is evident from governmental processes and services that have effectively re-engineered and reduced bureaucratic red tapes. Clearly, the eServices in the Sultanate provide quality responsive public services that are both transparent and efficient. ICT also provides the platform in which **good governance and effective institutions** can be established within the electronic services and applications. As highlighted, the following initiatives are essential for reaching the Sustainable Development Goals:

- ✓ The eTransaction Law and Cybercrime Law ensures the rule of law and equal access to justice for all.
- ✓ The eServices and applications such as the eTendering System and SAI feedback applications ensure effective, accountable and transparent services at all levels.
- ✓ SCP leverages on social media platforms to engage multiple stakeholders in formulating the national development plan, which ensures that there is an open, responsive, inclusive, participatory, and representative decision-making process for both top-down and bottom-up initiatives.
- ✓ The NRS system provided by ROP ensures a legal identity for all, including birth registration.
- ✓ The e.oman initiative also bridge the digital divide amongst the citizens and residents so that they can become IT savvy, and thereby interact and contribute to building a knowledge-based economy.
- ✓ The Community Knowledge Centers initiative coupled with the e.oman initiative ensures public access to information and protection of fundamental freedoms in the Sultanate.

The data from NRS, which is essential population data, and the National Center for Statistics and Information (NCSI), increase the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location, and other characteristics relevant in the national context. NRS uses single-sign-on based on the 'once only' principle, 'digital by default', thus reducing administrative burden and promoting whole-of-government communication.

On top of this, there are a large number of e.oman initiatives that encourage and promote effective public, public-private, and public-civil partnerships, as for instance the SAS for Virtual Reality, which is a partnership between private and public sectors. Such partnerships are crucial for boosting the local ICT sector, as it allows the government to leverage on private sector specialised competencies to proliferate the technology and sector.

VIII. Conclusion

Oman has made tremendous progress in moving public services online in the last four decades, with efforts to utilise ICT as a means of enabling the public to actively participate in the decision making process, has led to unprecedented steps towards creating more transparency and accountability in the governance structure. As an example, the election process of the Shura Council leverages on ICT solutions such as eVoting to ensure transparency. Undoubtedly, public involvement, represented both by individual citizens, communities, NGOs, and others impacted by specific policies and regulations, has provided the necessary legitimacy, as well as loyalty.

The establishment of the national ID card has been critical for ensuring interoperability between different user friendly public eServices such as eVoting, online visa application, traffic offense payment, and lost documents. The online visa applications, as an example, has led to a total of 10.5 million online applications.

The e.oman strategy has been effective in bridging the digital divide, resulting in an increase of about 63% from the 2003 population census up to 2013. Much of the success can be attributed to the increase in PC penetration coupled with ICT capacity building programmes. A number of capacity building programs have been strategically planned and implemented through the National IT Training and Awareness (NITTA) initiative. One of the key components of the NITTA is the Community IT Training aiming to provide IT literacy to the entire population.

Such initiatives caters to citizens in general and women in particular, especially those living in rural regions, providing digital literacy training and access to information, which, in turn, improve productivity, enhance quality of life, and enrich culture and tradition through enhanced communication and interaction.

Another key initiative for ensuring accurate information on human resources in the country, has been the formation of PAMR. The Manpower Registration System, in particular, is recognized as a tool for allowing the government to strategically invest in human capital that responds to the needs of priority economic sectors. Similarly, the formation of PACP has delivered a proper system and process for creating sustainable consumer protection based on electronic feedback from users. With strong enablers and success of the e.oman initiative, and on slew of eServices, some winning international recognitions, the Sultanate has managed to leapfrog the progress of creating sustainable development for its citizens.