

# **WASEDA – IAC 10<sup>th</sup> International E-Government Ranking 2014**

**Jointly Surveyed by Waseda University and  
International Academy of CIO (IAC)**

**Tokyo**

**May 2014**

## **Executive Summary**

The Institute of E-Government at Waseda University (Director: Prof. Toshio Obi), Tokyo in cooperation with the International Academy of CIO (IAC) has released the results of its international e-government rankings survey for 2014. This research presents the tenth consecutive year of monitoring and surveying worldwide e-government development by the research team of Professor Toshio OBI, Director of the Institute of E-Government and experts with IAC member universities. The result of the survey is that USA replaced Singapore (2<sup>nd</sup>) and tied for the first place, followed by South Korea in 3<sup>rd</sup>, the United Kingdom in 4<sup>th</sup> and Japan in 5<sup>th</sup> place. Canada in 6<sup>th</sup>, Estonia in 7<sup>th</sup>, Finland in 8<sup>th</sup>, Australia in 9<sup>th</sup> and Sweden ranked 10<sup>th</sup>.

During this one year survey, the research has been conducted through the organization of workshops and forums and the Team has arranged professional meetings and discussions with a variety of international and national organizations to improve oversight and objectivity. These groups include the Organization for Economic Co-operation and Development (OECD), Asia Pacific Economic Cooperation (APEC), the International Telecommunications Union (ITU), the World Bank (WB), United Nations and many other government agencies, think tanks and NGO/NPOs with e-government responsibilities in their respective countries.

The 2014 ranking, which marks the tenth anniversary of the Waseda E-Government ranking, incorporates several changes on evaluation framework compared to the previous years. To assess and evaluate the details of e-government preparedness and to align with new trends in e-government, two new indicators have been added to the ranking: “Open Government Data” and “Cyber Security”, which makes the total indicators to 9 items with 33 sub-indicators. Original 7 indicators are [Network] [Management] [Online service] [Home page] [GCIO] [Promotion] [Digital Inclusion]. In addition and in order to obtain comprehensive findings on the e-government around the world, this year, six countries are added as subjects of this research: Austria, Poland, Saudi Arabia, Colombia, Uruguay and Kenya. This makes a total of sixty-one surveyed countries compared to fifty-five last year.

Lastly, the official name of the [Waseda University E-Government Ranking Survey] is changed to [Waseda University – IAC joint E-Government Ranking Survey] with prominent experts from IAC partner universities.

In order to obtain the latest and the most accurate information and to assess the relevant data, the ranking was conducted by researchers around the world in cooperation with partner universities. Comprehensive data assessment has been conducted by expert groups from George Mason University (USA), United Nations University (Macao),

Bocconi University (Italy), Turku University (Finland), Peking University (China), Thammasat University (Thailand), De La Salle University (Philippines), Bandung Institute of Technology (Indonesia), National University of Singapore, Federal Academy School of IT Management (Russia) as well as main contributor, Waseda University (Japan).

An analysis of ten years of the Waseda – IAC joint E-Government Rankings Survey indicates the following 7 interesting aspects:

(1) The delivery of contents and application via online services (G2B, G2C) is being rapidly implemented and expanded to many fields in different level by most governments around the world.

(2) Social media has become a new star among major trends as leading governments continue to try the integration between social media and e-government services as well as emerging technologies such as cloud computing.

(3) Digital gap between ICT developed and developing countries become wider in terms of usability and cyber-security issues as well as emerging technologies

(4) Providing open government data is fast becoming a major political objective and commitment in many developed countries, and also Big Data processing enables governments to encourage the choices of creating new businesses based on large-scale quantitative analysis.

(5) Cyber-security issue is a crucial factor for achieving an advanced e-government network/infrastructure.

(6) There is urgent need in both public and private sectors to consolidate and extend effective CIO training program as ICT capacity building scheme due to lack of ICT professional manpower.

(7) Evaluation process and its methodology on the outcome of survey by indicators become more sophisticated and important than in the past based on the expanded role of e-government.

**Contact: Institute of E-Government Waseda University, Japan**

Email: [obi.waseda@gmail.com](mailto:obi.waseda@gmail.com)

URL: <http://e-gov.waseda.ac.jp/ranking2014.htm>

## **Acronyms**

APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
BCP	Business Continuity Planning
C2G	Citizen-to-Government
CIO	Chief Information Officer
EA	Enterprise Architecture
ERP	Enterprise Resource Planning
EU	European Union
G2C	Government-to-Citizen
G2G	Government-to-Government
GDP	Gross Domestic Product
IAC	International Academy of CIO
ICT	Information and Communication Technology
IDC	International Data Corporation
IEEE	Institute of Electrical and Electronics Engineers
ITU	International Telecommunication Union
OECD	Organization for Economic Cooperation and Development
PDCA	Plan Do Check Act
R&D	Research and Development
SNS	Social Networking Service
WB	World Bank

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## I. Historical Trends for 10 years Surveys of the Rankings

Throughout the ten years of the ranking, USA, Canada, Singapore and Finland are the leading countries and always stand in the top five. USA stood in first place from 2005 to 2008, but Singapore took the top spot from 2009 to 2011. For the three consecutive years, USA and Singapore have been alternately ranked at first and second. Looking at the ranking within the ten-year period, all of the countries in the top ten are developed countries except Malaysia in 2005 and Hong Kong in 2005 and 2008 due to their excellent infrastructure and policy for developing ICTs and e-government. In the cases of the USA and Singapore, all ranking indicators requirement have been met, even the newest 2014 indicators “Open Government Data” and “Cyber Security”.

The following table shows the top ten countries since the first edition of the ranking 2005 - 2014.

2005		2006		2007		2008		2009		2010		2011		2012		2013		2014	
1	USA	1	USA	1	USA	1	USA	1	Singapore	1	Singapore	1	Singapore	1	USA	1	Singapore	1	USA
2	Canada	2	Canada	2	Singapore	2	Singapore	2	USA	2	UK	2	USA	1	Singapore	2	Finland	2	Singapore
3	Singapore	3	Singapore	3	Canada	3	Canada	3	Sweden	2	USA	3	Sweden	3	Korea	3	USA	3	Korea
4	Finland	4	Japan	4	Japan	4	Korea	4	UK	4	Canada	4	Korea	4	Finland	4	Korea	4	UK
5	Sweden	5	Korea	4	Korea	5	Japan	5	Japan	5	Australia	5	Finland	5	Denmark	5	UK	5	Japan
6	Australia	6	Germany	6	Australia	6	Hong Kong	5	Korea	6	Japan	6	Japan	6	Sweden	6	Japan	6	Canada
7	Japan	7	Taiwan	7	Finland	7	Australia	7	Canada	7	Korea	7	Canada	7	Australia	7	Sweden	7	Estonia
8	Hong Kong	8	Australia	8	Taiwan	8	Finland	8	Taiwan	8	Germany	8	Estonia	8	Japan	8	Denmark	8	Finland
9	Malaysia	9	UK	9	UK	9	Sweden	9	Finland	9	Sweden	9	Belgium	9	UK	8	Taiwan	9	Australia
10	UK	10	Finland	10	Sweden	9	Taiwan	10	Germany Italy	10	Taiwan, Italy	10	UK Denmark	10	Taiwan Canada	10	Netherlands	10	Sweden

**Table 1: Historical Trends of the Ranking 2005 - 2014**

Through this research the following seven points from lessons learnt from the analysis of ten years of the Waseda – IAC E-Government Rankings Survey:

(1) The delivery of contents and application via online services (G2B, G2C) is being rapidly implemented and expanded to many fields in different level by most governments around the world.

(2) Social media has become a new star among major trends as leading governments continue to try the integration between social media and e-government services as well as emerging technologies such as cloud computing.

(3) Digital gap between ICT developed and developing countries become wider in terms of usability and cyber-security issues as well as emerging technologies

(4) Providing open government data is fast becoming a major political objective and commitment in many developed countries, and also Big Data processing enables governments to encourage the choices of creating new businesses based on large-scale quantitative analysis.

(5) Cyber-security issue is a crucial factor for achieving an advanced e-government network/infrastructure.

(6) There is urgent need in both public and private sectors to consolidate and extend effective CIO training program as ICT capacity building scheme due to lack of ICT professional manpower.

(7) Evaluation process and its methodology on the outcome of survey by indicators become more sophisticated and important than in the past based on the expanded role of e-government.

## **II. Total Ranking 2014**

Table 2 shows the final 2014 e-government ranking. There is no significant structural change compared to last year, except that the United State of America replaced Singapore and tied for first place, followed by South Korea in 3<sup>rd</sup>, the United Kingdom in 4<sup>th</sup>, and Japan in 5<sup>th</sup> place. Korea, the UK and Japan have each advanced one step compared to last year. Last year, Canada tied for 12<sup>th</sup> place but this year stands in 6<sup>th</sup>. Estonia also jumped up to 7<sup>th</sup> ranking. The Netherlands and Taiwan slipped out of top ten and are ranked at 17<sup>th</sup> and 18<sup>th</sup>, respectively. There is not much change in the middle of ranking, except for China, which slipped down to 39<sup>th</sup> from 27<sup>th</sup> last year.

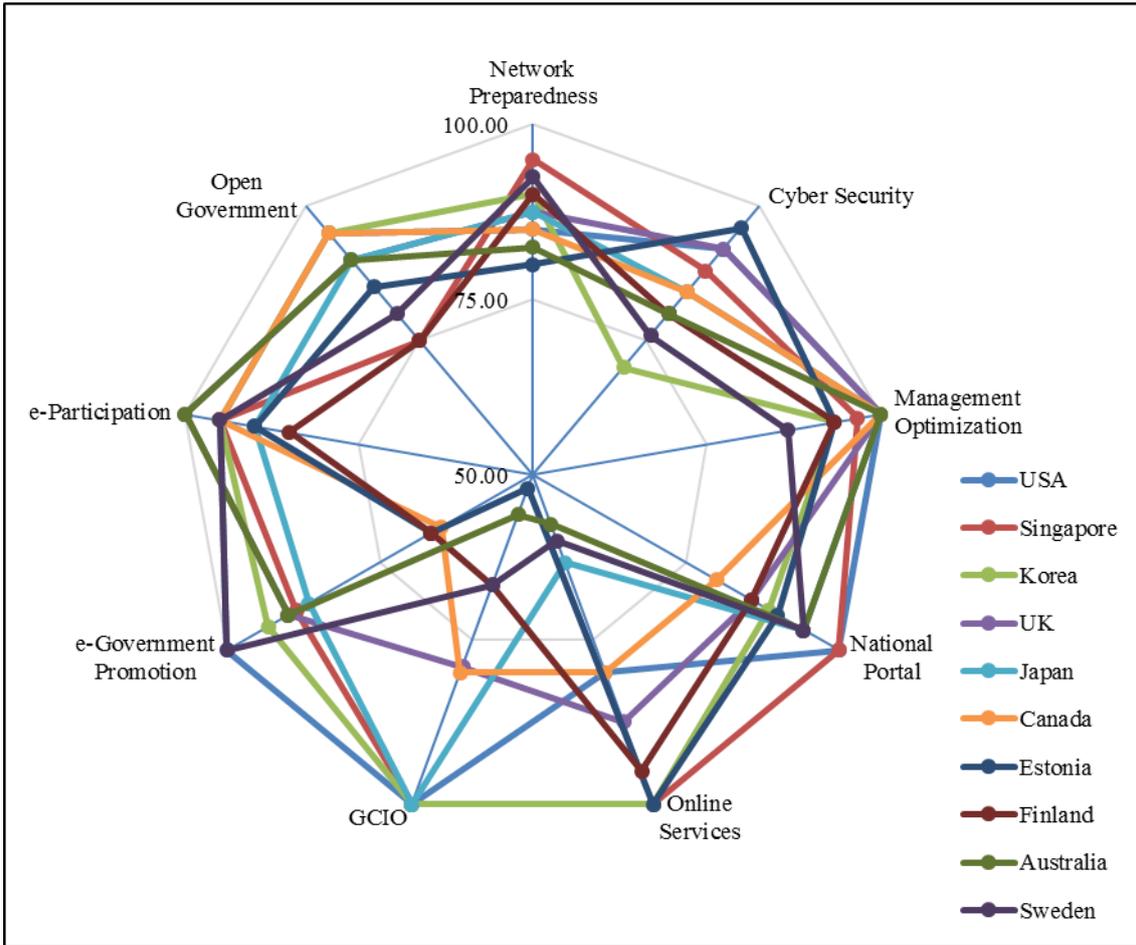
There is a limited progress in the areas of some indicators in China compared to other countries. Due to its massive population, its significant regional differences, and its status as a developing country, the lack of information technology in rural areas and a nationwide qualified capacity building progressive restrict the development of e-government. Despite several developments in China, e-participation is still lacking as

a platform to bring Chinese citizens on board as main stakeholders in the promotion of ICT. The government provides no forum, blog or any other means of citizen interaction; hence there is still a long way to go for Chinese e-government to develop e-participation so that online users have a full stake in decision-making as e-democracy at the national level, as well as open government.

The bottom tier of this ranking still hosts familiar names from last year, such as Fiji, Uzbekistan, Cambodia and Iran respectively at 57<sup>th</sup>, 59<sup>th</sup>, 60<sup>th</sup> and 61<sup>st</sup>. Uruguay, Colombia and Kenya are three of the six new countries added in 2014 ranking for the first time. Unlike the other three new countries, they stand in the lower group.

No	Final Rankings	Score	No	Final Rankings	Score	No	Final Rankings	Score
1	USA	94.00	22	Spain	69.66	43	Philippines	51.83
2	Singapore	93.77	23	Thailand	68.60	44	Romania	50.66
3	Korea	92.39	24	Israel	68.18	45	Nigeria	50.62
4	UK	90.40	25	Portugal	66.84	46	Kazakhstan	49.08
5	Japan	88.00	26	Hong Kong	64.83	47	Chile	46.94
6	Canada	85.30	27	Malaysia	63.71	48	Argentina	46.56
7	Estonia	84.41	28	Turkey	62.65	49	Tunisia	46.51
8	Finland	82.69	29	India	61.49	50	Venezuela	46.05
9	Australia	82.37	30	Czech Republic	61.18	51	Pakistan	45.19
10	Sweden	81.93	31	Macau	61.15	52	Georgia	44.15
11	Denmark	79.06	32	Indonesia	60.98	53	Colombia	43.88
12	New Zealand	79.04	33	UAE	60.84	54	Peru	43.60
13	Norway	77.97	34	Vietnam	59.93	55	Uruguay	43.52
14	Switzerland	77.30	35	Russia	59.83	56	Egypt	41.37
15	Austria	76.66	36	Mexico	59.51	57	Fiji	40.73
16	Germany	75.97	37	Saudi Arabia	56.18	58	Kenya	40.72
17	Netherlands	75.80	38	South Africa	55.22	59	Uzbekistan	32.59
18	Taiwan	74.51	39	China	54.62	60	Cambodia	32.45
19	France	74.48	40	Brazil	54.40	61	Iran	29.02
20	Italy	72.80	41	Brunei	53.84			
21	Belgium	69.97	42	Poland	52.06			

**Table 2: Waseda – IAC Joint E-government Ranking 2014**



**Figure 1: Waseda-IAC Top 10 E-Government Ranking**

### III. E-government ranking by Indicators

The Waseda – IAC E-Government Ranking contains comprehensive benchmarking indicators in order to obtain an accurate and precise assessment of the latest development of e-government in the major countries in ICT section. In 2014, two indicators were added to evaluate e-government in each country. Altogether, there were nine main indicators used to carry out the 2014 survey. Table 3 below shows all 9 indicators and their 33 sub-indicators.

Indicators	Sub-indicators
1.Network Preparedness/ Infrastructure	1-1 Internet Users 1-2 Broadband Subscribers 1-3 Mobile Cellular Subscribers 1-4 PC Users
2. Management Optimization/ Efficiency	2-1 Optimization Awareness 2-2 Integrated Enterprise Architecture 2-3 Administrative and Budgetary Systems

3. Online Services/Functioning Applications	3-1 e-Procurement 3-2 e-Tax Systems 3-3 e-Custom Systems 3-4 e-Health System 3-5 One-stop service
4. National Portal/Homepage	4-1 Navigation 4-2 Interactivity 4-3 Interface 4-4 Technical Aspects
5. Government CIO	5-1 GCIO Presence 5-2 GCIO Mandate 5-3 CIO Organizations 5-4 CIO Development Programs
6. e-Government Promotion	6-1 Legal Mechanism 6-2 Enabling Mechanism 6-3 Support Mechanism 6-4 Assessment Mechanism
7. e-Participation/Digital Inclusion	7-1 e-Information Mechanisms 7-2 Consultation 7-3 Decision-Making
8. Open Government	8-1 Legal Framework 8-2 Society 8-3 Organization
9. Cyber Security	9-1 Legal Framework 9-2 Cyber Crime Countermeasure 9-3 Internet Security Organization

**Table 3: The Main Indicators and Sub-Indicators**

This research not only analyzes the development of websites and ICT deployment in governments, but also looks into real operations, such as management optimization, internal processes, online services, and new trends in e-government development and the relationship between governments and their stakeholders.

The top thirteen e-government ranking by indicators is listed in Table 4 below:

Network Preparedness		Management Optimization		Online Services		National Portal	
No	Country	No	Country	No	Country	No	Country
1	Singapore	1	USA	1	Singapore	1	Singapore
1	Denmark	1	UK	1	Korea	1	USA
1	Norway	1	Japan	1	Estonia	1	Norway
1	Netherlands	1	Canada	4	Finland	1	France
5	Sweden	1	Australia	5	UK	1	Hong Kong
6	Korea	1	New Zealand	6	USA	6	Japan
6	Finland	1	Switzerland	6	Canada	6	Australia
6	France	1	Netherlands	6	Denmark	6	Sweden
6	Switzerland	1	Belgium	6	Switzerland	6	Denmark
10	Belgium	10	Singapore	6	Austria	6	Russia
10	Germany	11	Denmark	11	Israel	11	Taiwan

10	Japan
10	UK

11	Estonia
11	Finland

11	Portugal
13	France

12	Estonia
12	Switzerland

GCIO	
No	Country
1	Singapore
1	USA
1	Korea
1	Japan
5	Canada
6	UK
7	New Zealand
8	Finland
8	Sweden
8	Thailand
11	Netherlands
12	Taiwan
13	Germany

e-Government promotion	
No	Country
1	USA
1	Sweden
3	Korea
4	UK
5	Australia
6	Singapore
6	Japan
8	Taiwan
9	Spain
10	Italy
10	Portugal
12	Norway
13	Belgium

e-Participation	
No	Country
1	UK
1	Australia
1	Spain
4	USA
4	Singapore
4	Korea
4	Canada
4	Sweden
4	France
10	Japan
10	Estonia
10	Denmark
10	Israel

Open Government	
No	Country
1	USA
1	Korea
1	Canada
4	UK
4	Japan
4	Australia
4	New Zealand
4	Germany
4	Austria
4	France
11	Estonia
11	Norway
11	Taiwan

Cyber Security					
No	Country	No	Country	No	Country
1	Estonia	3	Austria	11	Finland
1	New Zealand	7	Singapore	11	Australia
3	USA	8	Canada	11	Denmark
3	UK	8	Japan		
3	Germany	8	Norway		

**Table 4: Top 13 Countries (Economies) on 9 Individual Indicators**

### 1. Network Preparedness/Digital Infrastructure

Network preparedness is the basic infrastructural foundation for effective e-government implementation. Different stage of infrastructure has long been available in many countries and has become an important tool to connect citizens and enterprises to government. In developing countries, the number of internet users, broadband subscribers and especially mobile cellular subscribers continue to rise.

Based on the new trends in ICT and e-government development, when the platform moves to “cloud computing” and the number of “smartphones” rises daily, mobile broadband becomes one of the key network preparedness factors. Effective broadband access stimulates citizens to use such services and encourages the deployment of new services.

Building upon the transformative nature of ICT and maintaining focus on e-government development, all countries in the top ten of the Network Preparedness indicator are high-income developed countries. Most of the Nordic countries appear in the top fifteen of the overall ranking. This is evidence that Network Preparedness is a very important basic indicator for e-government usability.

Singapore is an important country with small total territory. Singapore continues to rank at first place, as it did last year. This year, it shares first place with three European countries: Denmark, Norway, and the Netherlands. Korea is the second country in the Asia-Pacific region. Singapore stands in the top of this indicator ranking. There is no representative of the Americas in the top ten of this indicator in 2014.

## **2. Management Optimization**

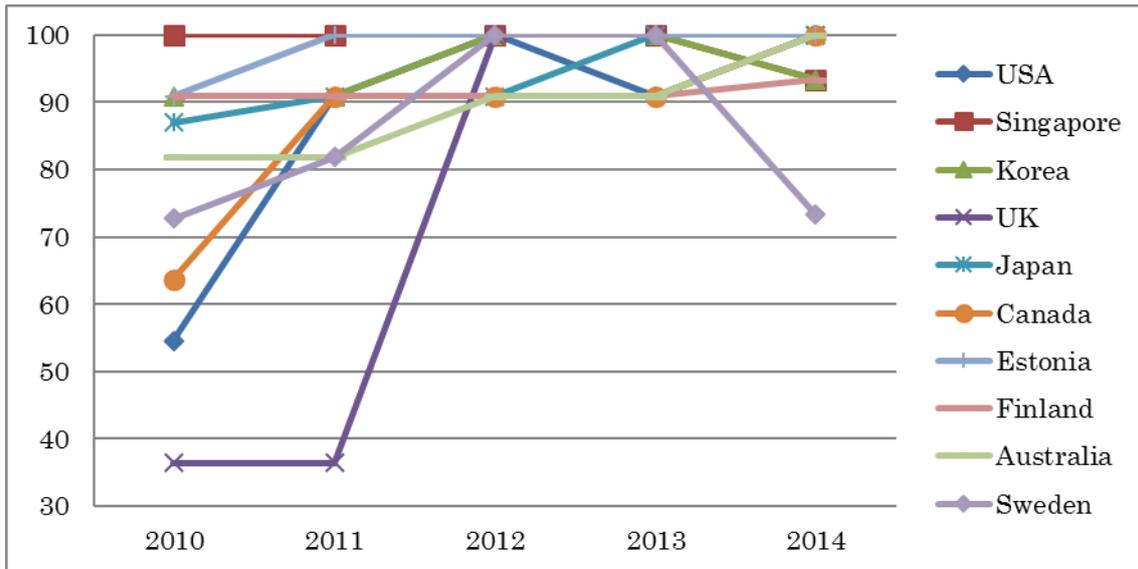
All governments understand that ICT can help governments to improve their internal processes, optimize the productivity and efficiency of activities in their ministries and departments. To improve administrative systems, government services must be available to all stakeholders and make immediate and continuous gains. In this indicator, both PDCA cycle and EA are extremely important for effective evaluation and problem solving. In this ranking, management optimization refers to e-government planning strategies with linkages at the national and local levels (e-municipality). This encompasses the entire coverage government with well-defined targets.

The Waseda – IAC E-Government Ranking considers “Management Optimization” as a critical business function that underpins the operational, financial, accounting and strategic planning of business, social, health and administrative affairs within the country.

In 2014, eight countries share the first place with the United States of America, followed by Singapore in 10<sup>th</sup> place. Asia region had two representatives in the top ten of this indicator Japan and Singapore. There is no difference in the top ten countries’ scores from last year. This proves that the leading countries continue to focus on internal processes such as the establishment optimization awareness program by introducing PDCA, EA and ERP systems.

In case of the United States of America which ranked at the first place in management optimization, e-government objectives are focused on the high-priority areas of improving internal operations and management. These objectives are intended to help better execute internal administrative and support functions across different government entities. The utilization of ICT in internal processes and government computerization efforts in the US improves every day. The level of ICT integration in 2014 is high.

Management optimization directly supports the department’s goal management excellence, which focuses upon transforming interior into a “highly skilled, accountable, modern, functionally integrated, citizen centered and results-oriented” organization. US e-government strategies at the national and local levels are very well-prepared and extend across the entire central and state government with well-defined priorities. Moreover, national e-government strategies should clearly state the organization of agencies that supervise, coordinate, consult, and report on e-government strategy implementation.



**Figure 2: Trend of Management Optimization Ranking 2010 – 2014**

### 3. Online Services/ Applications

Initial strategies for electronic service delivery are guided by the functions and areas of responsibility of government agencies and are focused on online presences with gradual enhancement in e-services. This has shifted to user-oriented strategies in service delivery in recent years, the most visible results are come from much more diverse, advanced and comprehensive electronic services via one-stop service.

In this survey, online services refer to the systems of e-procurement, e-tax, e-custom, e-health and one-stop service. The most recent trends show that some governments in developing countries have shifted to user-oriented strategies and have developed one-stop service portals. They are also planning to gradually expand and enhance a variety of integrated service delivery.

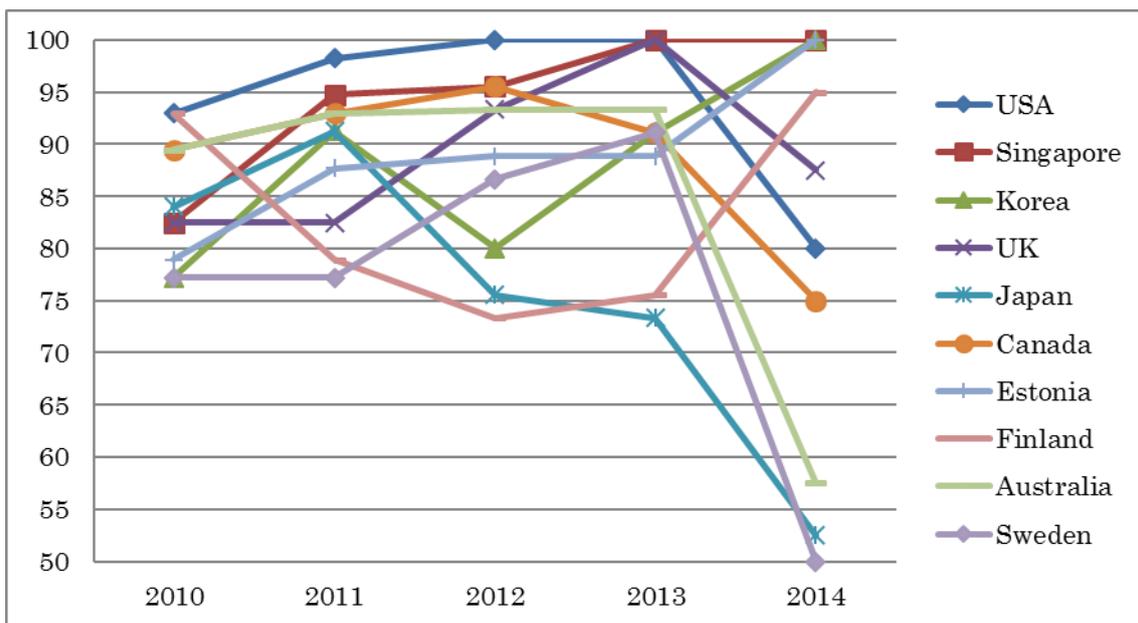
The results of Waseda – IAC survey have Singapore, Korea, and Estonia tied for the first place. In 4<sup>th</sup> place is Finland, followed by UK in 5<sup>th</sup>. Five countries are tied for 6<sup>th</sup> place: USA, Canada, Denmark, Switzerland and Austria. The ranking suggests that e-government applications become more common. Austria, newly added to the

2014 survey, tied with these top-ten countries in this indicator and in two other indicators, and placed within the top fifteen in total ranking.

Both Singapore and Korea are special cases. They share the first place and they are the only representatives from Asia region. This illustrates that online services are not the strength of both European countries and the United States of America compared to their ranks over the last several years.

In Singapore, nearly 98% of public services are available online, the majority of them being transactional in nature. Citizens in Singapore are able to do almost everything online, from filing and paying their taxes, to managing their pensions and mortgages, to registering their marriages, newborns or the deaths of their loved ones. Businesses in Singapore can bid for government contracts online, apply or renew their licenses or permits, and even check the file their patents, trademarks and/or IP online. The “MyeCitizen” personalization portal brings private and public sector services and contents together. Both citizens and businesses can also personalize their experience by selecting their areas of interest to receive relevant information. The Singapore government has also been utilizing mobile channels to deliver services to its customers.

The interface for applications in Korea e-Government is relatively solid. Under the implementation of “Government for Citizen (G4C)” that began in 2002, the Ministry of Public Administration and Security currently provides various online civic services through its portal ([www.egov.go.kr](http://www.egov.go.kr)), with approximately 5,000 guidance, 400 certificate applications, and 30 online certificate issuances available. The online interface provides more than 4,000 governments and administrative services. They are divided into 12 categories including taxes and other electronic services with 135 sub-categories in order to help the user navigate the site easily.



**Figure 3: Trend of Online Service Ranking 2010 - 2014**

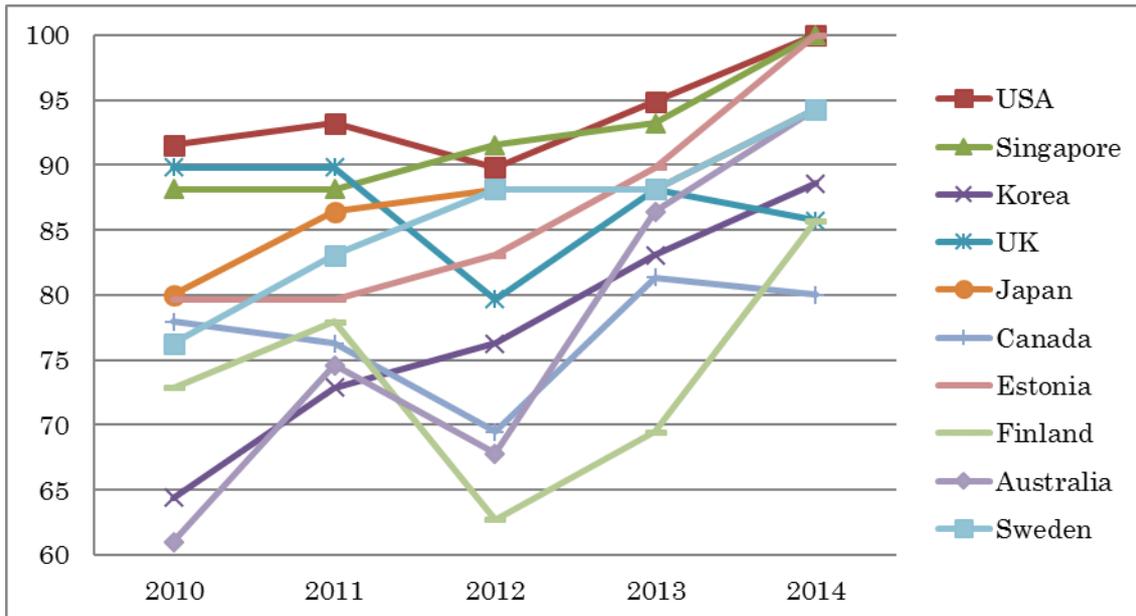
#### **4. National Portal/ Homepage**

The national portal is generally the most basic point-of-access interface for citizens and other users to find e-government services. Most of the countries surveyed here have long-established portals and have thus achieved a certain level of technical sophistication. The national portal is the face of the government to communicate with citizens, businesses and provide e-services, guidance information, and other utilities.

For this indicator, five countries stood in the first place, followed by another five countries tied for 6<sup>th</sup> place. Throughout the survey, the final result shows the continued dominance of the USA and Singapore, which also took first place for this indicator last year. Both the Singapore and USA national portals continue to lead the way in terms of design, navigation, innovation, and extensive use of web 2.0 technology.

The Singapore portal is well organized, and serves as a platform to assist the public in finding any desired information. To improve the browsing experience, the portal also allows users to create government accounts that enable each individual user to customize the portal to suit his or her preferences. The portal also connects users to social media such as Facebook, Twitter, YouTube, and Blogging sites. There is also a customization feature to receive update email notifications. The Singapore National Portal uses Web 2.0 technology and integrates Social Networking Service (SNS) features as well while providing a user-friendly portal electronic services and information.

The USA is one of the top-ranked countries for its national portal: [www.usa.gov](http://www.usa.gov). This is the US Government's web portal for citizens. It presents a wide range of informational resources and online services from various government sources, accessible from a single point-of-entry. It is also known as the National Portal of the USA and it is a gateway to improve the communication experience between the government and the public. Moreover, it provides information that helps the public better understand the government's structure. The well-organized portal serves as a platform that assists the public to find desired information. To improve the browsing experience for users, the portal also allows them to create government accounts that enable each individual user to customize the portal as they desire. The website contains accessibility features including a live chat platform available Monday - Friday: 08:00 AM - 08:00 PM every day except holidays. This provides one-stop platform for all government information and services. It comprehensively lists all public services, forms, tools and transactions that the government provides in a user-friendly manner.



**Figure 4: Trend of National Portal Ranking 2010 - 2014**

## 5. Government Chief Information Officer (GCIO)

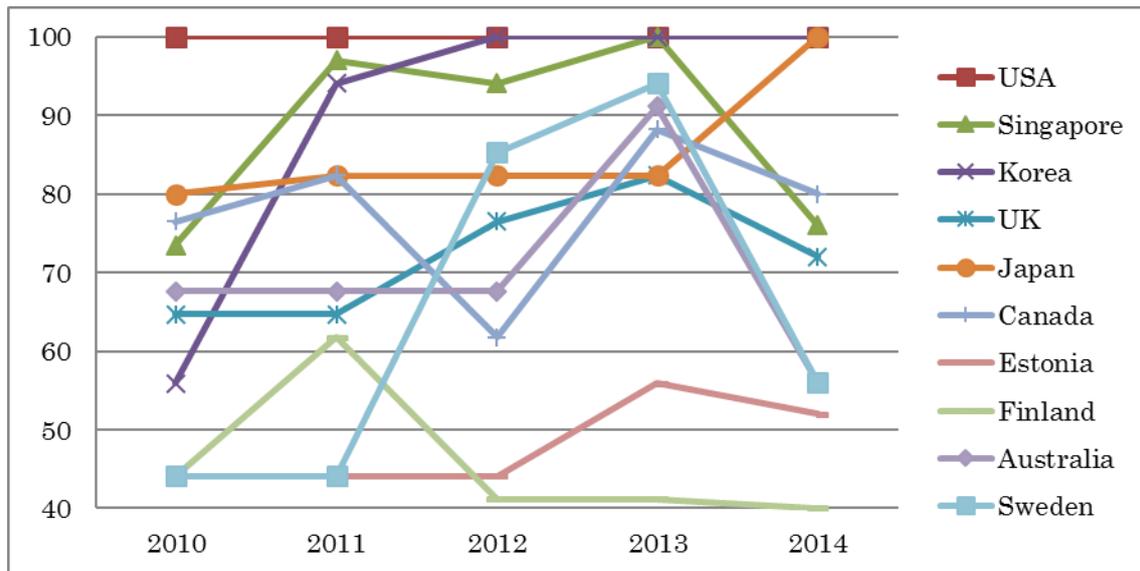
The GCIO is prioritized by many governments as one of the key factors in the success of an e-government implementation. With this in mind, the Waseda – IAC ranking has continued to survey a set of CIO sub-indicators since the first e-government ranking in 2005. As awareness of the essential role of the CIO has increased, most surveyed countries have now established CIOs (or equivalent titles) responsible for e-government activities. They also have programs for CIO development, bodies for supporting CIO and a framework for CIO functions.

In 2014, the final ranking for this indicator includes three countries in Asia: Singapore, Korea and Japan (tied at first place with the USA), followed by Canada, UK and New Zealand at 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> while Finland, Sweden and Thailand tied for 8<sup>th</sup>. In this indicator ranking, four countries from Asia place within the top ten: Singapore, Korea, Japan and Thailand. It is interesting to note that so many countries in Asia have considered the CIO role as a key element in promoting e-government development.

In Singapore, the GCIO is working to manage the Infocomm Development Authority of Singapore (IDA). The IDA-GCIO provides technical advice, master-planning and project management services. IDA-GCIO also identifies and conceptualizes e-government programs and projects, and it also drives both the development and implementation of e-government programs and projects. The GCIO champions whole-of-government ICT initiatives to maintain the Singapore Government's leadership position as an innovative user of Infocomm technologies in order to delight customers and connect citizens. With the changing engagement in government-citizen relationships, the Citizen Engagement Division of the GCIO

e-government group has facilitated the adoption of social media, Web 2.0 technologies and mobile applications in government.

In Japan, each central ministry has a CIO who is appointed from among senior staff within the ministry (usually the director general of administration) and an assistant CIO, an externally-recruited expert. The Federal CIO Council composed of Ministry CIOs has the authority to decide on many rules regarding in-house ICT installation and online services. In 2012, the percentage of CIO appointments at the prefectural level was 90% (appointments at the local level were at 80%). The government also established a GCIO as the head of all Ministry CIOs in November 2012.



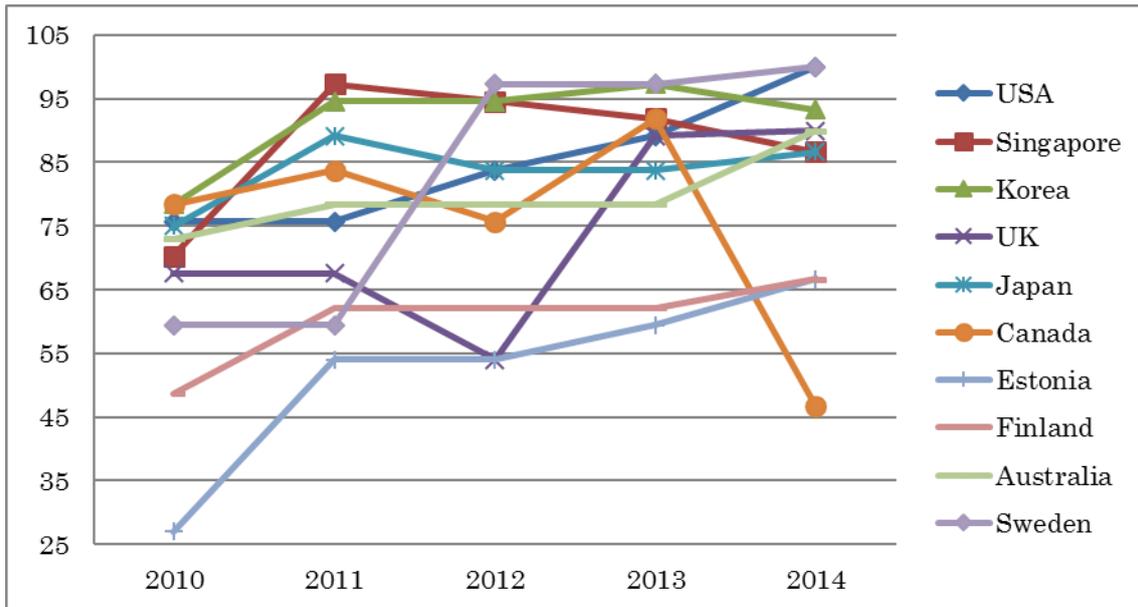
**Figure 5: Trend of Government CIO Ranking 2010 – 2014**

## 6. E-government Promotion

The e-government promotion indicator is evaluated by using a comprehensive list of parameters which judge the degree of development in each sector as well as the current status of each development in e-government promotion. This ranking includes activities aimed at supporting the implementation of e-government such as legal frameworks and mechanisms (law, legislations, plans, policies and strategies). In other words, these activities are carried out by the government in order to support the development of e-services and in-house operations.

Based on Table 4 (page 14), the result of this indicator ranking shows the USA and Sweden tied for the 1st place, followed by Korea at 3rd and the UK and Australia tied for 4<sup>th</sup>. Last year's leader, Singapore, dropped a few step to tie for 5<sup>th</sup> in 2014. Japan and Taiwan tied at 6<sup>th</sup>. Almost all developing countries received a low score due to lack of laws, legislations, strategies or policies involving e-government promotion. Trainings, conferences, advertisements and oversight committees on e-government have yet to be enacted in many of these countries.

This year's leader, the United States of America, actively promotes Internet use and other information technology in order to increase opportunities for citizen participation and interagency collaboration. Electronic government services are also provided, and these collaborations improve the services provided to citizens by integrating related functions and the use of internal electronic government processes. The US improved the ability to achieve the mission and program performance goals of their agencies. In general, the promotion of e-government solutions within and across various government agencies will assure citizen-centric government information and access to services.



**Figure 6: Trend of E-Government Promotion Ranking 2010 – 2014**

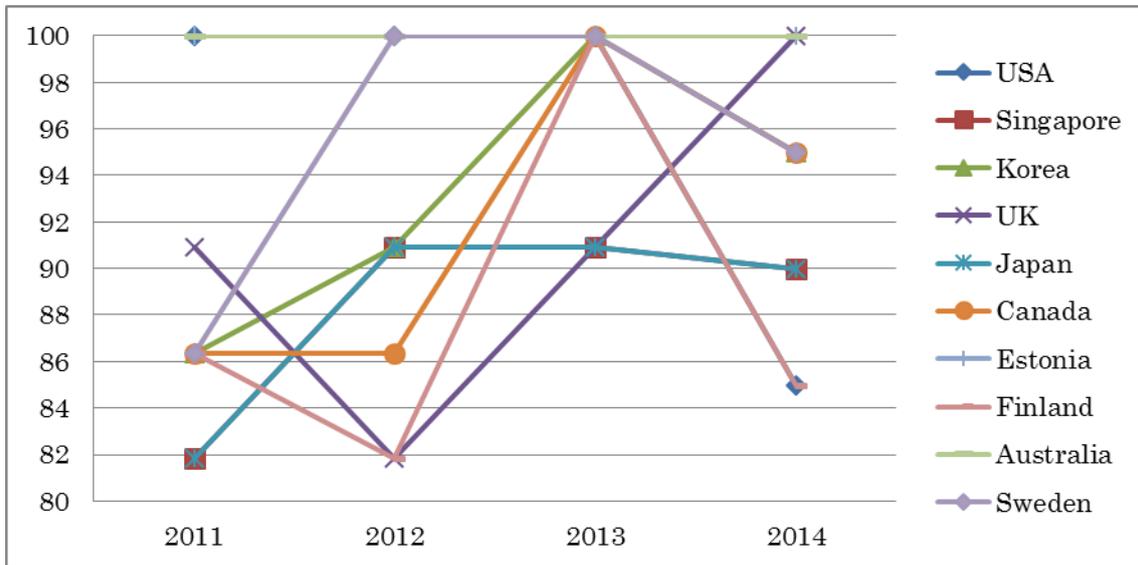
## 7. E-participation/ Digital Inclusion

The use of Web 2.0 technologies in e-government applications (otherwise known as Government 2.0) is on the rise. E-participation is a term referring to ICT-supported participation in governance processes. The processes are often concerned with administration, service delivery, decision-making and policy-making.

In this indicator, the United Kingdom, Australia and Spain share the first place, followed by six countries tied in 4<sup>th</sup>: USA, Korea, Singapore, Canada, Sweden and France. All countries in the top ten are developed countries which illustrates that ICT has been implemented very effectively in government management and leadership in developed countries. Most developing countries provide e-information services. However, with regards to e-consultation and e-decision, there is little evidence to show that these governments collect and evaluate the opinions of citizens in all processes.

In the United Kingdom, citizens can participate in decision-making processes both on- and off-line via forums, polls, legislative propositions, and lobbying. Citizens can log into the website or create blogs in the national portal to voice their opinions via

polls and engage in e-voting. Citizens can also directly contact senior government officials by email or by simply calling.



**Figure 7: Trend of E-Participation Ranking 2011 – 2014**

## 8. Open Government Data

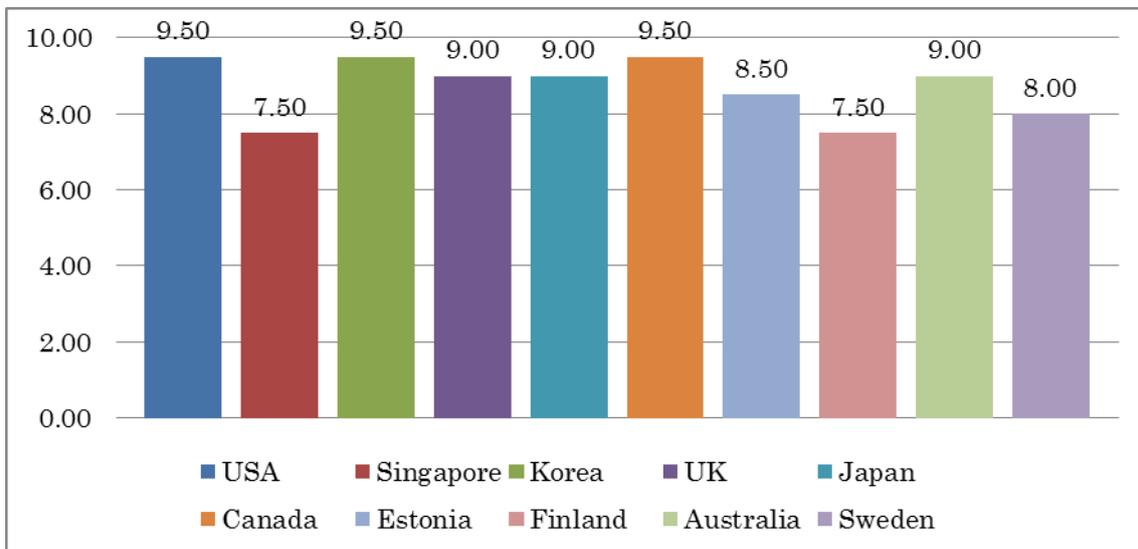
Providing Open Government Data is fast becoming a major political objective and commitment in many countries. Its implicit promises to support economic growth and to improve public services, as well as to promote government transparency and accountability make it an attractive policy objective. While many governments are rushing to launch political initiatives and online portals, the majority have yet to demonstrate the full benefits of open government data and make the necessary preparations to realize those benefits.

In this indicator, there are three countries tied at the first place: USA, Korea and Canada, followed by seven countries standing in 4<sup>th</sup>: UK, Japan, Australia, New Zealand, Germany, Austria, and France. This is the first year that this indicator was selected to evaluate e-government development in one country.

The United States was one of the first countries that deploy an Open Government strategy and wield this strategy effectively. Since the first full day in office, President Obama has prioritized government openness and accountability and has taken substantial steps to increase citizen participation, collaboration, and transparency in government. Data.gov, the central site for US Government data, is an important element of the Administration's effort to open government. It launched in May 2009 with numerous datasets. As of October 2013, the US Government had published 98,852 datasets. One of the best open government practices in the US is the Climate Corporation, which was founded in 2006 and is growing rapidly. The Climate Corporation provides Federal crop insurance based on acreage premiums. In December

2013, the US Government released the Second Open Government National Action Plan, which describes how the goals of the Open Government Partnership—transparency, participation and collaboration—will be executed and reports on the progress of various initiatives.

The Government of Canada first launched its Open Government strategy in March 2011, and then further enhanced its commitment by announcing its intention to join the Open Government Partnership in September 2011. Over the past two years, Canada has welcomed feedback from its citizens on both the development of a Digital Economy Strategy as well as Open Government initiatives. The Digital Economy consultation sought feedback from all Canadians on how to improve innovation and creativity, in order to achieve the shared goal of making Canada a global leader in the digital economy. In 2011, the Canadian government launched a consultation to explore citizens' perspectives on Open Government in order to inform the development of Canada's Action Plan on Open Government. Canada's Action Plan on Open Government sets out Canada commitments to its people via the Open Government Partnership, which Canada will achieve over a three-year period through the effective and prudent use of resources. It is designed on top of the three streams of Open Government Strategy: Open Information, Open Data, and Open Dialogue.



**Figure 8: 2014 Open Government Data Scores of Top 10 Countries**

## 9. Cyber Security

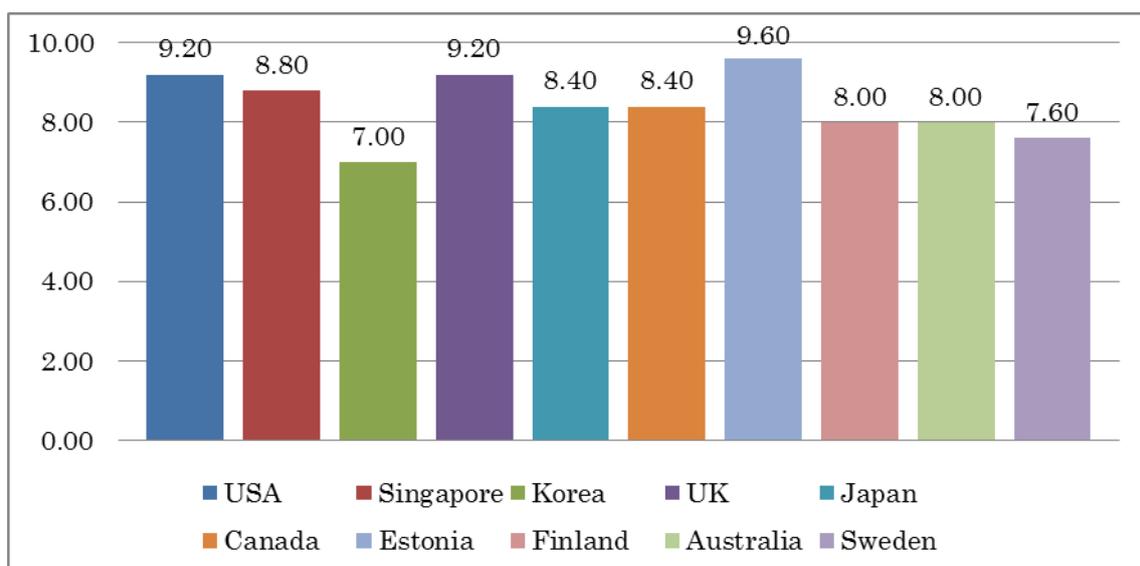
The Cyber-attacks are a serious threat to e-government security in any country. Cyber security is most simply defined as the security measures applied to computers and networks to provide the desired level of protection. The security measures associated with individual e-government systems are relatively similar to many e-commerce solutions. However, the span of control of e-government and its unique impact on its user base requires a network that is greater than the sum of each individual

system. E-government faces the same challenges that faced e-business in the private sector, but the stakes are often higher.

Like other electronic transactions, the rise of e-government leads to unintended security implications and increased vulnerabilities to cyber threats. To face these challenges, governments around the world must develop effective cyber security strategies. One of the crucial and growing concerns on the near-horizon for e-government is the information security in e-government applications as well as infrastructure.

Along with Open Government Data, Cyber Security is the newest indicator in the 2014 ranking. Estonia and New Zealand shared the first place this year. The USA and the UK tied for third despite the fact that they have excellent infrastructure and policies in place to prevent and respond to cyber-attacks. Sharing the third place with the USA and the UK is Germany and Austria. Austria earned an excellent position not only in this indicator, but in the overall ranking as well. Singapore tied at 7<sup>th</sup>, followed by Canada, Japan and Norway at 8<sup>th</sup>.

Estonia's achievements in cyber security are due to a strong ICT partnership between the public and private sectors. The secret to Estonian cyber security lies in the inherent safety and security built into every single Estonian e-government and ICT Infrastructure system. The secure 2048-bit encryption that powers Estonia's Electronic-ID digital signatures and X-road-enabled systems means that personal identity and other sensitive data in Estonia is safe. Estonian citizens and businesses can operate with confidence, knowing that their data will be safe and their transactions are secure. Indeed, the best kind of cyber security is one that citizens do not have to think about it every day.



**Figure 9: 2014 Cyber Security Scores of Top 10 Countries**

## IV. E-Government Ranking by Organizations

### 1. Ranking of APEC Economies

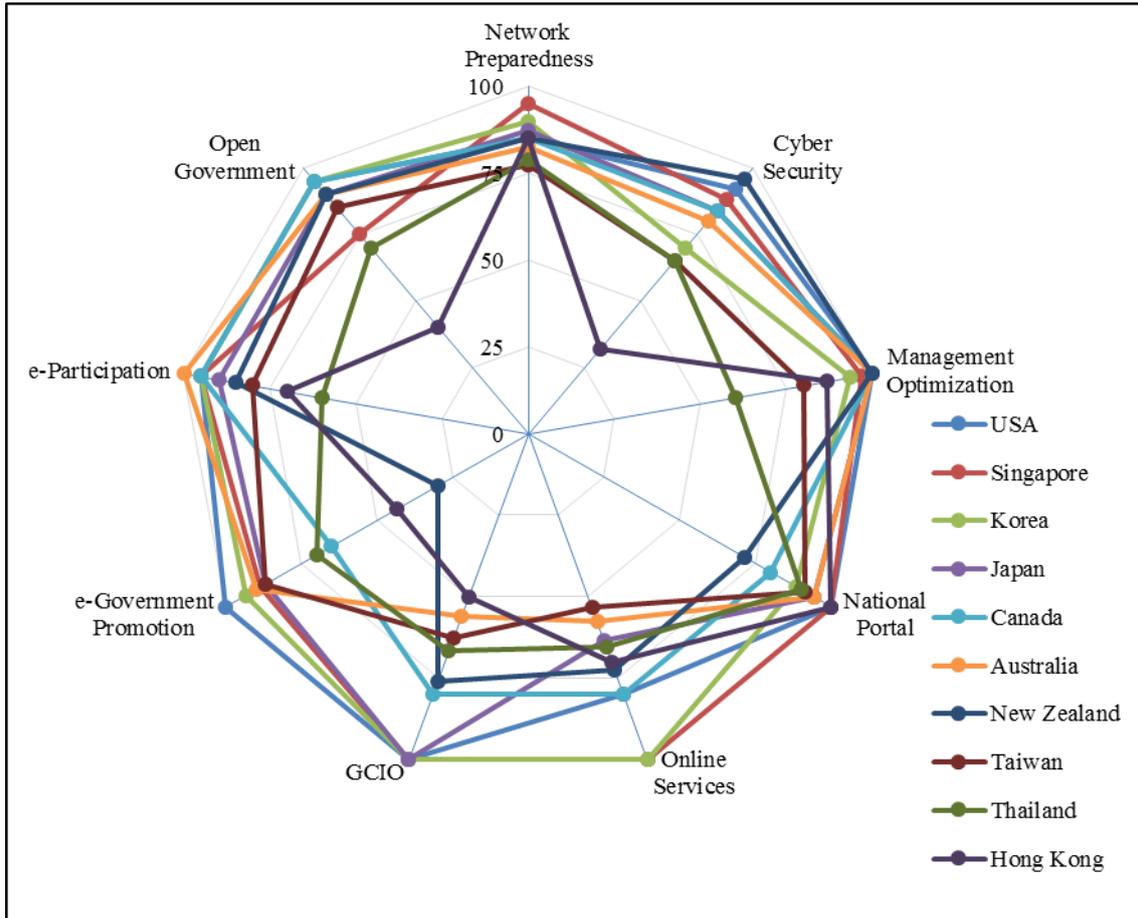
APEC Member			APEC Member			APEC Member		
No	Economies	Score	No	Economies	Score	No	Economies	Score
1	USA	94.00	8	Taiwan	74.51	15	Mexico	59.51
2	Singapore	93.77	9	Thailand	68.60	16	China	54.62
3	Korea	92.39	10	Hong Kong	64.83	17	Brunei	53.84
4	Japan	88.00	11	Malaysia	63.71	18	Philippines	51.83
5	Canada	85.30	12	Indonesia	60.98	19	Chile	46.94
6	Australia	82.37	13	Vietnam	59.93	20	Peru	43.60
7	New Zealand	79.04	14	Russia	59.83			

**Table 5: E-government ranking in APEC Economies**

Asia Pacific Economic Cooperation (APEC) consists of a group of major economies in growing region of the world. APEC includes the three largest economies in the world: USA, China and Japan. However, APEC includes both developed and developing countries, and a major gap in economic, ICT, and e-government development would exist.

The APEC group consists of twenty-one member Economies, and this ranking covers twenty of them. This is the third consecutive year of monitoring and surveying the development of e-government within the APEC group. The top five ranked APEC Economies also place in the top seven of the overall ranking.

In 2014, the USA replaced Singapore for the top spot leaving Singapore in second place. Korea is ranked 3<sup>rd</sup> (as it was last year), followed by Japan at 4<sup>th</sup>. The middle of this group registered major changes as Vietnam tied at 13<sup>th</sup>, up from 16<sup>th</sup> last year. China dropped to 16<sup>th</sup> place from 12<sup>th</sup> last year. At the last rank, there is Peru with no change from the previous year.



**Figure 10: Top 10 APEC Economies**

## 2. Ranking of OECD Countries

OECD Member			OECD Member			OECD Member		
No	Countries name	Score	No	Countries name	Score	No	Countries name	Score
1	USA	94.00	10	Denmark	79.06	19	Belgium	69.97
2	Korea	92.39	11	New Zealand	79.04	20	Spain	69.66
3	UK	90.40	12	Norway	77.97	21	Israel	68.18
4	Japan	88.00	13	Switzerland	77.30	22	Portugal	66.84
5	Canada	85.30	14	Austria	76.66	23	Turkey	62.65
6	Estonia	84.41	15	Germany	75.97	24	Czech Republic	61.18
7	Finland	82.69	16	Netherlands	75.80	25	Mexico	59.51
8	Australia	82.37	17	France	74.48	26	Poland	52.06
9	Sweden	81.93	18	Italy	72.80	27	Chile	46.94

**Table 6: E-government ranking in OECD Countries**

OECD has thirty-four member countries, most of which are developed with high per-capita incomes and high Human Development Index (HDI) scores (with the exceptions of Turkey, the Czech Republic, and two countries from the Americas: Chile and Mexico). In this survey, the Waseda – IAC ranking covers twenty-seven OECD

countries. Many upper class OECD members are Nordic countries which are known to have an edge in telecommunications infrastructure and e-government development.

Most of the countries in the top ten of this group are also the top countries in the overall world ranking, with the exception of Singapore as it is not an OECD member. The leaders of group are the USA, Korea and UK. They tied for 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> place respectively, followed by Japan at 4<sup>th</sup> and Canada at 5<sup>th</sup>. Denmark also edged into the top ten in this group ranking. As mentioned above, Nordic countries dominate in the top ten. Korea and Japan are two Asian countries in the top ten in for the results of most indicators and group rankings.

Compared to the last year these countries have not changed position. Poland is a new country in the 2014 survey but compared to other Eastern European countries, Poland’s e-government development focused on the improvement of ICT skills in the labor market, targeting human development, and increasing ICT manpower.

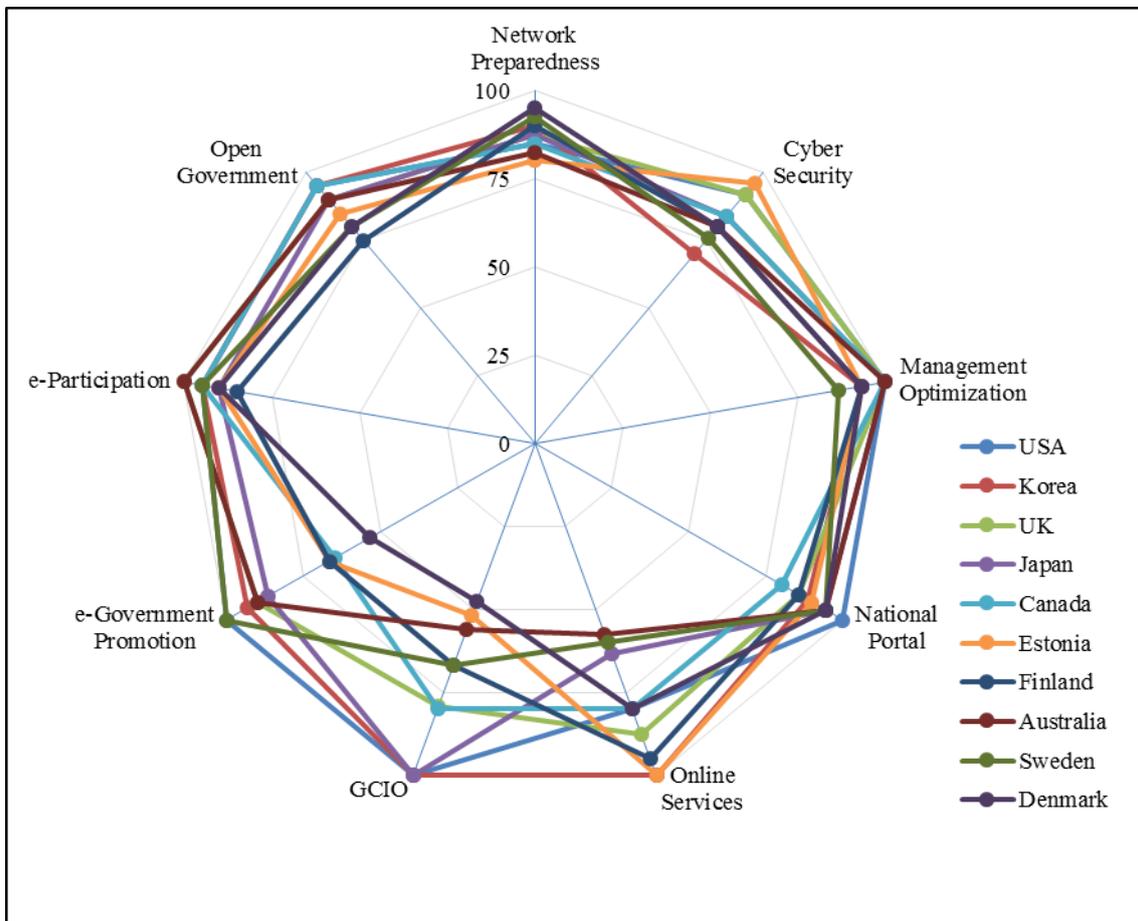


Figure 11: Top 10 OECD Countries

### 3. Ranking of ASEAN Countries

ASEAN Member			ASEAN Member		
No	Countries name	Score	No	Countries name	Score
1	Singapore	93.77	5	Vietnam	59.93
2	Thailand	68.60	6	Brunei	53.84
3	Malaysia	63.71	7	Philippines	51.83
4	Indonesia	60.98	8	Cambodia	32.45

**Table 7: E-government ranking in ASEAN Countries**

In this group ranking, Waseda – IAC surveyed eight of ten ASEAN countries. E-government development in this region is in its initial stages with regards to public administration reform, infrastructure, and broadband access. Singapore is a significant exception, as nearly all of its government services and transactions are available online.

Singapore ranked second in the overall ranking and it is naturally the leading ASEAN country. The remaining countries are developing countries, with Cambodia in last place. The ranking shows Singapore in the first place with very high score compared to Cambodia at the bottom. Thailand follows Singapore in second place but, comparing the score between the two countries, the survey shows a significant gap between first and second place. This is the evidence that ASEAN member nations have developed unevenly and are split into three separate groups: (1) high-income and developed, including only Singapore; (2) developing, including Thailand, Malaysia, Indonesia, Vietnam, Brunei and Philippines; and (3) low-income and undeveloped, including Cambodia.

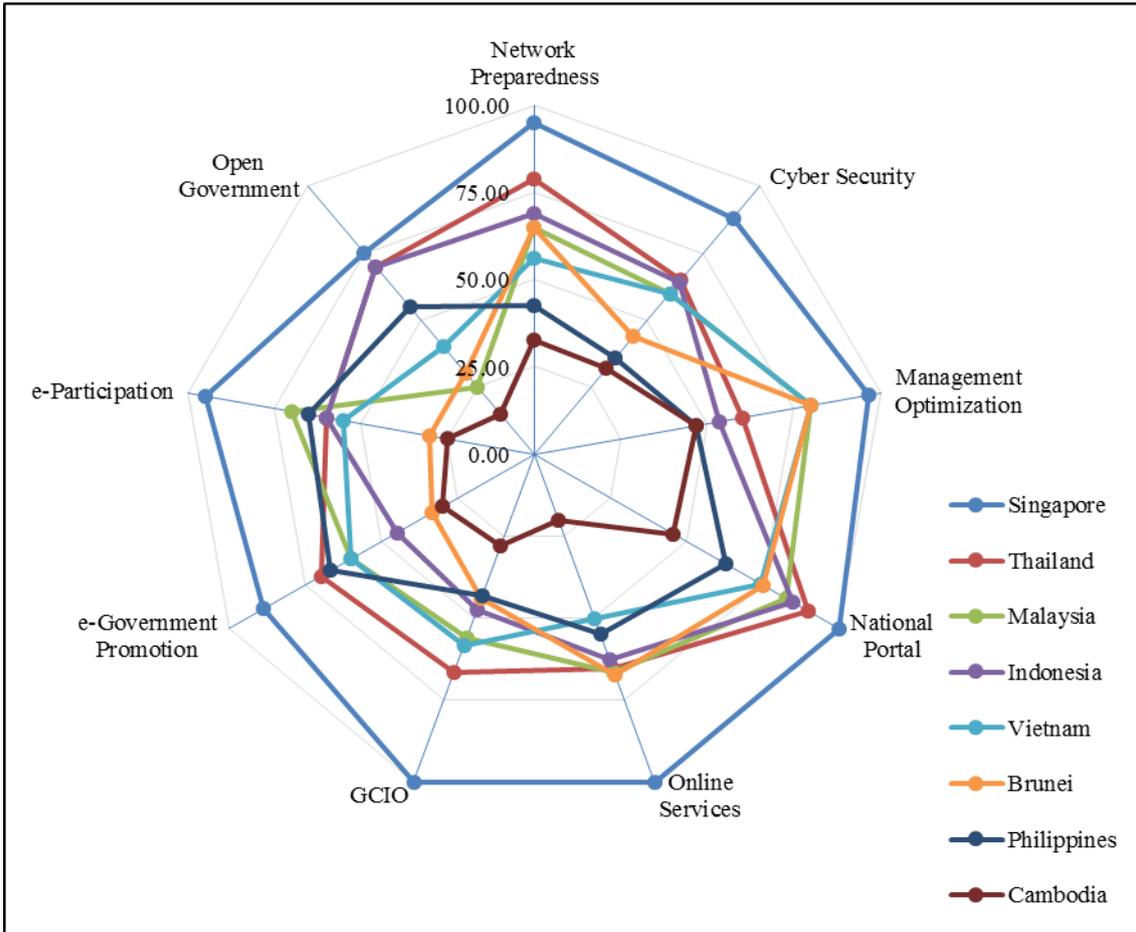


Figure 12: E-Government in ASEAN Countries

## V. E-Government Ranking by the Size of Population and GDP

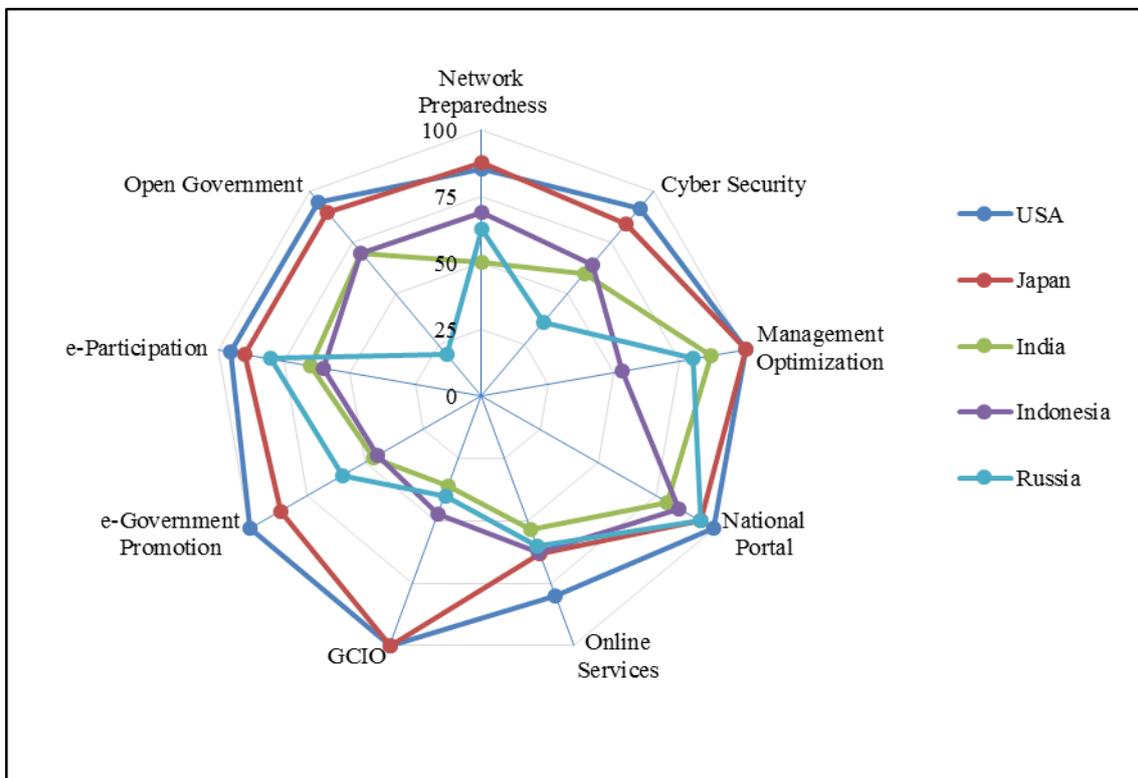
### 1. Ranking in Big Population Countries (higher than 100 million)

This is the third consecutive year of monitoring and surveying based on population size. In 2014, this group consists of countries with a population greater than 100 million. Most countries with big population often have large area as well. Therefore, these countries face many unique developmental challenges in e-government, such as building a nationwide broadband network, and delivering e-services to all citizens.

Big Population Countries		
No	Countries Name	Score
1	USA	94.00
2	Japan	88.00
3	India	61.49
4	Indonesia	60.98
5	Russia	59.83
6	Mexico	59.51
6	China	54.62
8	Brazil	54.40
9	Philippines	51.83
10	Nigeria	50.62

**Table 8: E-government ranking in Big Population Countries**

In this group, the United States of America is positional in the 1<sup>st</sup> place, followed by Japan in 2<sup>nd</sup> and India in 3<sup>rd</sup>. One pronounced feature of this ranking group is that all of the countries are developing nations except for the USA and Japan. Comparing the countries at top and bottom demonstrate a massive gap in e-government development. The USA is probably a special case. It has a high population and a large land area, but it is the world's leading country in e-government development. One of the main reasons is that the USA is home to particularly effective local governments. In the USA, the Government-to-Government initiative is aimed towards collaboration between different levels of government to empower state and local governments to serve citizens.



**Figure 13: Top 5 Big Population Countries in E-Government**

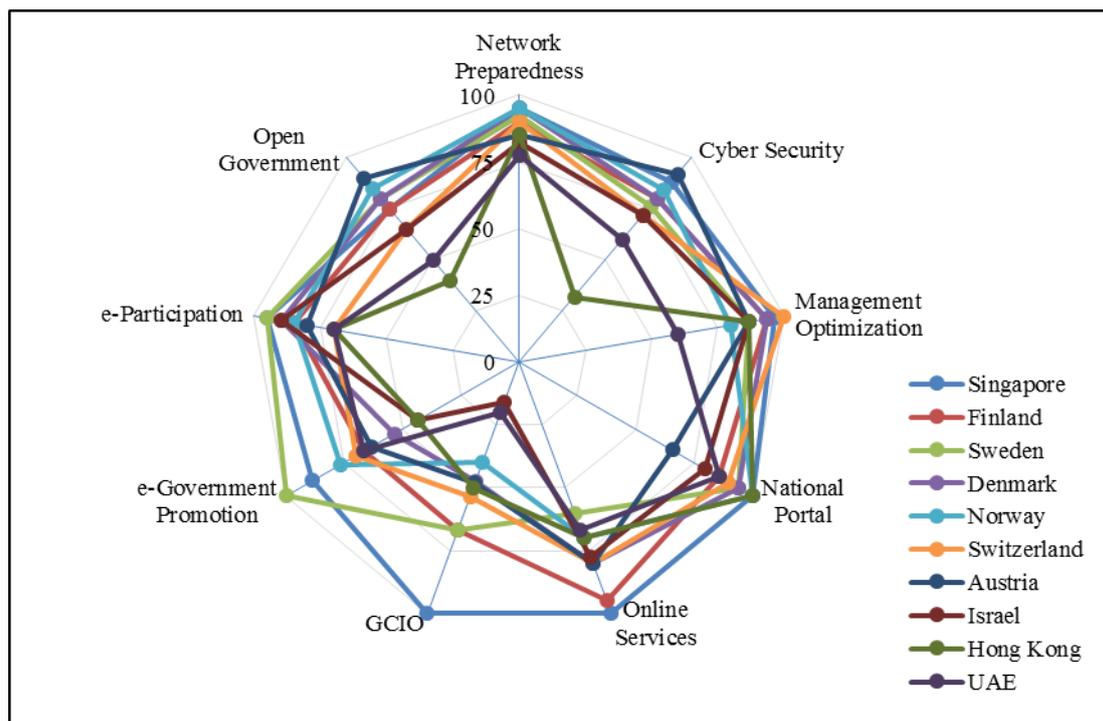
## 2. Ranking in Small Population Countries (Less than 10 million)

Small Population Countries		
No	Countries Name	Score
1	Singapore	93.77
2	Finland	82.69
3	Sweden	81.93
4	Denmark	79.06
5	Norway	77.97
6	Switzerland	77.30
7	Austria	76.66
8	Israel	68.18
9	HK SAR	64.83
10	UAE	60.84

**Table 9: E-government ranking in Small Population Countries**

This survey defines “Small population country” as a country with fewer than 10 million citizens. All these top ten countries are developed nations with high levels of human resources. In this group, Nordic countries are major players. There are no changes in the top four from last year: Singapore remains in the 1<sup>st</sup> place, followed by Finland, Sweden and Denmark at 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup>, respectively. The UAE replaced Israel at the bottom of the top ten compared to the last year.

Singapore has implemented e-government successful and effectively as detailed above. This is an excellent case study for the best practices for other countries to learn and apply. Singapore, so called a city-state, has few local government divisions. In order to monitor and manage its e-government development better, the Singapore government has chosen a centralized approach. The government also owns the entire central ICT infrastructure, and manages all services and policies affecting citizens. Thanks to this centralized infrastructure, all e-services provided by the government can utilize the same security, electronic payment, and data exchange mechanisms. Therefore, many countries with small populations can apply this “Singapore” model to implement e-government rapidly and effectively.



**Figure 14: Top 10 E-Government Ranking in Small Population Countries**

### 3. E-government ranking in Top 10 Countries with Highest GDP in World

Highest GDP group		
No	Countries Name	Score
1	USA	94.00
2	UK	90.40
3	Japan	88.00
4	Germany	75.97
5	France	74.48
6	Italy	72.80
7	India	61.49
8	Russia	59.83
9	China	54.62
10	Brazil	54.40

**Table 10: E-government ranking with Highest GDP Group**

Annual changes in the nominal level of output or income of an economy are affected by a combination of forces: real growth, price inflation, and exchange rates. This year the USA, China and Japan are the biggest economic powers in the world based on size of GDP. In terms of e-government, the US and Japan are in first and third place, respectively, while China ranked within the top ten at 9<sup>th</sup> of scores. Following Japan are three European countries: Germany, France and Italy. In the bottom of top ten group are India, Russia, China and Brazil. These BRICs nations are developing

countries, and they are also included in the big population group. While these countries are in the high-GDP and big populations groups, they have faced lots of e-government implementation challenges.

The Indian government has steadily evolved from the computerization of government departments, to initiatives that encapsulate the finer points of governance, such as citizen centricity, service orientation and transparency. Lessons from previous e-governance initiatives have played an important role in shaping the nation's progressive e-governance strategy. Efforts have been made to speed up e-governance implementation across the various arms of the government at the federal, state, and local levels. This approach should be guided by common national vision and strategy. It has the potential to produce huge cost savings by sharing core and support infrastructure, enabling interoperability via common standards, and presenting a seamless view of government to citizens.

The implementation of e-government in Russia from the beginning has suffered from the lack of a clear state policy on ICT. Other factors include insufficient interrelation between e-government programs with administrative, political, social and economic reforms, Weak collaboration mechanisms among agencies have been one of the main reasons for e-government issue except in regions of Moscow and St. Petersburg that demonstrated an advanced level of ICT development.

Due to the big population and significant regional differences in this developing country, the lack of information technology infrastructure and a standardized educational system are still the main factors that restrict e-government development.

Brazil is one of the largest nations in the group in both population and territory. Therefore, a solid infrastructure is required to provide the e-services to all citizens. Currently, a major barrier to the effective use of e-services is a lack of citizen awareness. This is also an obstacle to the accurate assessment of citizen demand. One of the most imposing challenges is that only citizens with higher levels of education and incomes have the access and the skills to utilize new ICT tools to access e-Government services. Education remains a fundamental requirement in order to enable net citizenship and to allow for the advancement of e-government.

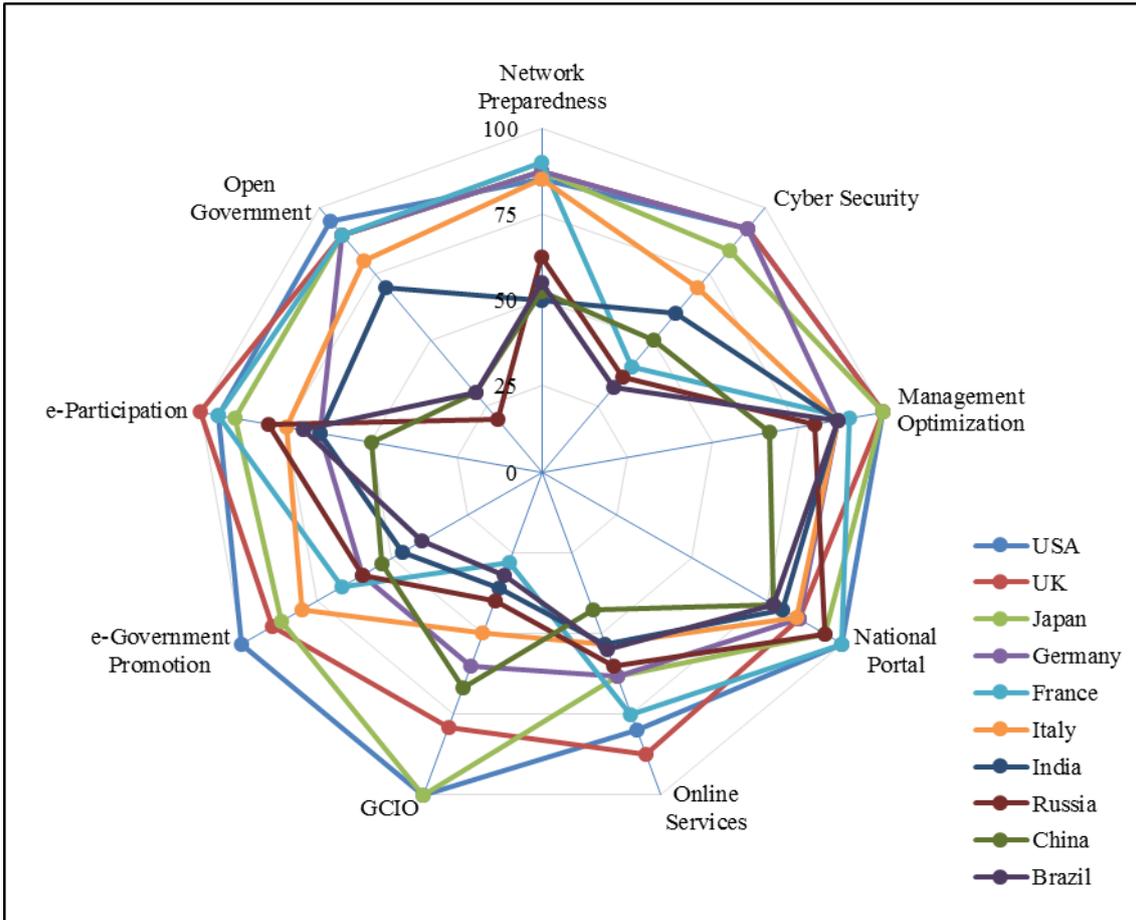


Figure 15: Top 10 E-Government Ranking in Highest GDP Countries

## VI. E-Government Ranking by Regions

### 1. Ranking in Asia-Pacific Countries

Asia-Pacific Countries		
No	Countries name	Score
1	Singapore	93.77
2	Korea	92.39
3	Japan	88.00
4	Australia	82.37
5	New Zealand	79.04
6	Taiwan	74.51
7	Thailand	68.60

Asia-Pacific Countries		
No	Countries name	Score
8	Hong Kong	64.83
9	Malaysia	63.71
10	India	61.49
11	Macau	61.15
12	Indonesia	60.98
13	Vietnam	59.93
14	China	54.62

Asia-Pacific Countries		
No	Countries name	Score
15	Brunei	53.84
16	Philippines	51.83
17	Pakistan	45.19
18	Fiji	40.73
19	Cambodia	32.45

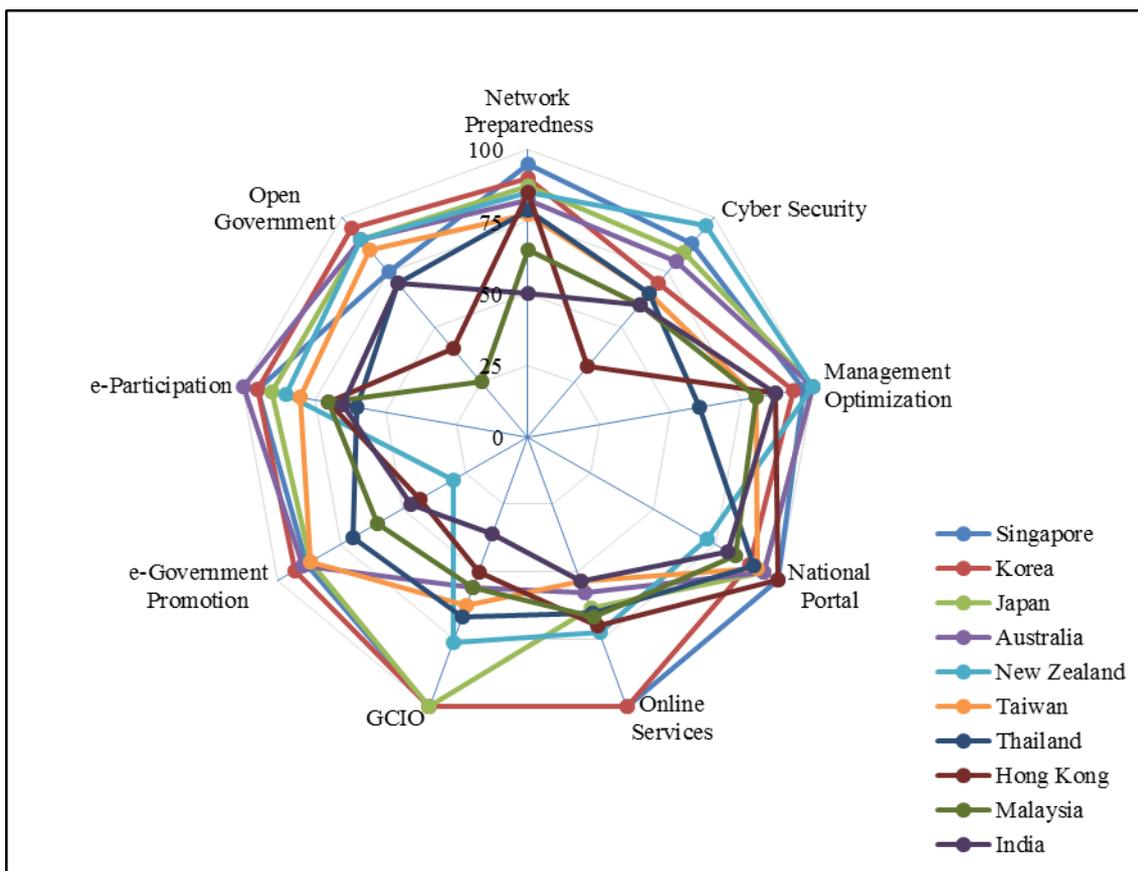
Table 11: E-government ranking in Asia-Pacific Countries

In 2014, this ranking surveyed twenty of fifty-two countries and territories in this region. In this group Singapore stood in the 1<sup>st</sup> place, followed by Korea in 2<sup>nd</sup> and Japan in 3<sup>rd</sup>. These countries are in top five world leader in e-government and it is

naturally the leading Asia-Pacific countries. The bottom of this ranking still hosts familiar names from the overall ranking, such as Fiji, Uzbekistan and Cambodia.

In this region, where the digital divide shows clearly with some members (Singapore, Korea and Japan) in the top ten and some members (Fiji, Uzbekistan and Cambodia) in the bottom of this group. This proves that, there is uneven e-government development and ICT in this group.

Korean government achieved an additional development in terms of e-government participation. Korean government successfully achieved a balance of digital use between the urban and rural areas by increasing 97% of rural communities. In December 2012, Korea presented their innovative e-government solution “E-Government Standard Framework” known as “eGovFrame.”. By introducing standardization and flexibility, “eGovFrame” aims to increase the efficiency of government ICT investment and improving the quality of e-government services offered to the citizens. With this project, Korea has emerged as one of the world’s leading providers of e-government and m-government (standing for “mobile government”) solutions.



**Figure 16: Top 10 E-Government Ranking in Asia-Pacific Countries**

## 2. Ranking in Americas Countries

America Countries			America Countries			America Countries		
No	Countries name	Score	No	Countries name	Score	No	Countries name	Score
1	USA	94.00	5	Chile	46.94	9	Peru	43.60
2	Canada	85.30	6	Argentina	46.56	10	Uruguay	43.52
3	Mexico	59.51	7	Venezuela	46.05			
4	Brazil	54.40	8	Colombia	43.88			

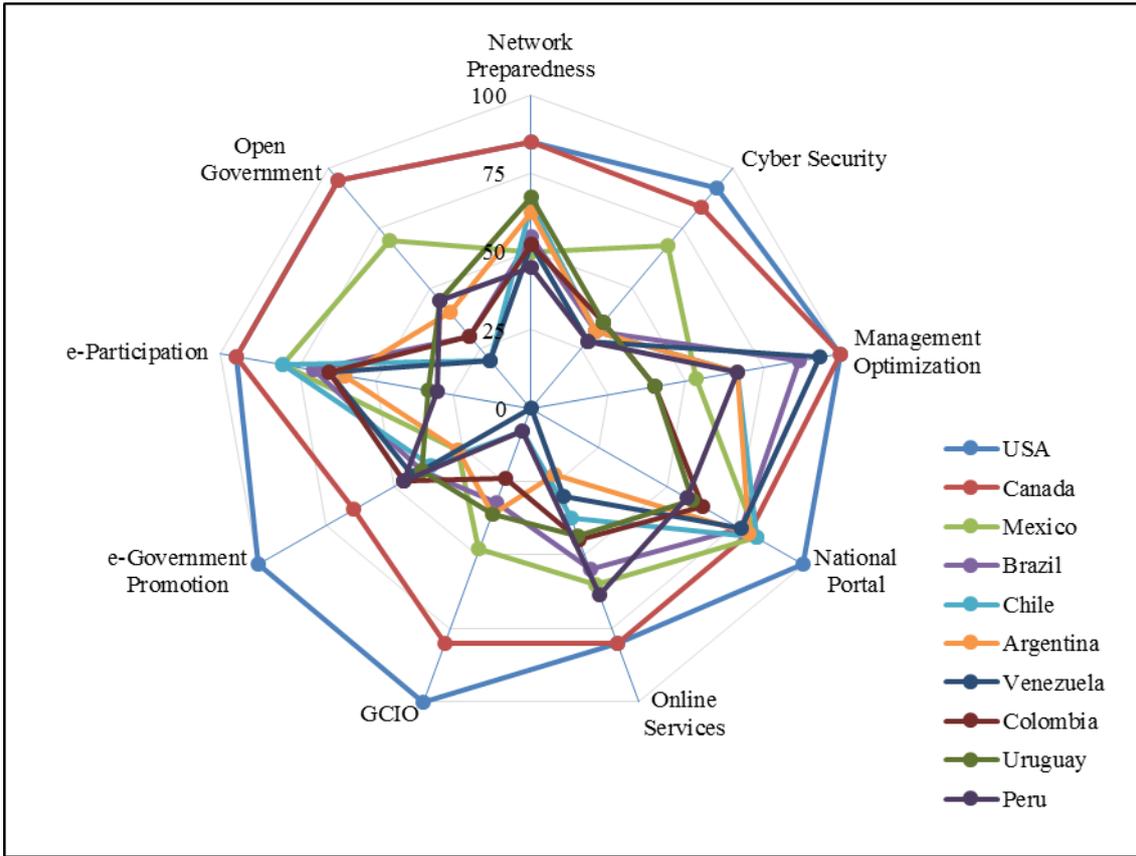
**Table 12: E-government ranking in Americas Countries**

The USA in the first place of overall world ranking is also the first place of this group, followed by Canada in 2<sup>nd</sup> and Mexico in 3<sup>rd</sup>. In the bottom of this group are two new countries, Colombia and Uruguay stood in 8<sup>th</sup> and 10<sup>th</sup> respectively.

E-government implementation is rather sufficient in Canada with most of its services being not just informational but also transactional. With the continuation of support from the government, Canada is likely that it will continue to be one of the top leaders on e-government in the world. Recently on October, 2012 the City of Toronto is expanding its digital capabilities to serve citizens via e-post, The City of Toronto's move to e-billing underscores the importance of both adapting to and accelerating the digital habits of citizens in an effort to offer more digital convenience at reduced costs and with improved efficiencies.

Mexico has continued its steady growth in Information Society and e-government but there are some issues that Mexican government has facing is digital divide and the big population, the Mexican government has so far done a great job in conceiving projects that considerably expand access to disadvantaged groups through e-Mexico. Recent state and municipal statistics have highlighted the gradual progress made in implementing e-government in Mexico at federal and state level. In 2001, the government launched an e-government initiative that prioritized providing health, education, and other government services online, as well as the development of e-commerce. Now, compared with other Latin America, Mexico had the most advanced e-services development with a "strong national government portal" that encouraged online consultations between government and citizens.

The Mexican government announced in 2013 that President Enrique Pena Nieto wishes to restructure Mexico's telecommunication regulatory frameworks, allowing broadband to become top priority in the government's agenda. Mexico already reached some of the goals defined by the Broadband Commission for Digital Development such as affordability, where the current cost of entry-level fixed broadband subscription is 2.5% of the average Mexican monthly salary, while the target was 5%. However, the government wants to deliver internet access to all its populations to enable citizens to have full access to the e-services.



**Figure 17: Top 10 E-Government Ranking in Americas Countries**

### 3. Ranking in European Countries

This region has been vanguard for information technology and telecommunications infrastructure, particularly in the Nordic countries. Europe is largely made up of developed countries with high per-capita incomes and a wealth of human resources. With regards to e-government development, EU countries are encouraged to deploy advanced technologies, institute better governance and e-services while simultaneously pursuing greater transparency, efficiency and inclusion.

Waseda – IAC covered sixteen of the twenty-eight EU member nations. All countries in the top five are in Northern Europe, except for the UK. The leader of this group is the United Kingdom, followed by Estonia, Finland, Sweden and Denmark tied at 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> respectively while the Czech Republic, Poland and Romania placed at the bottom of the ranking group.

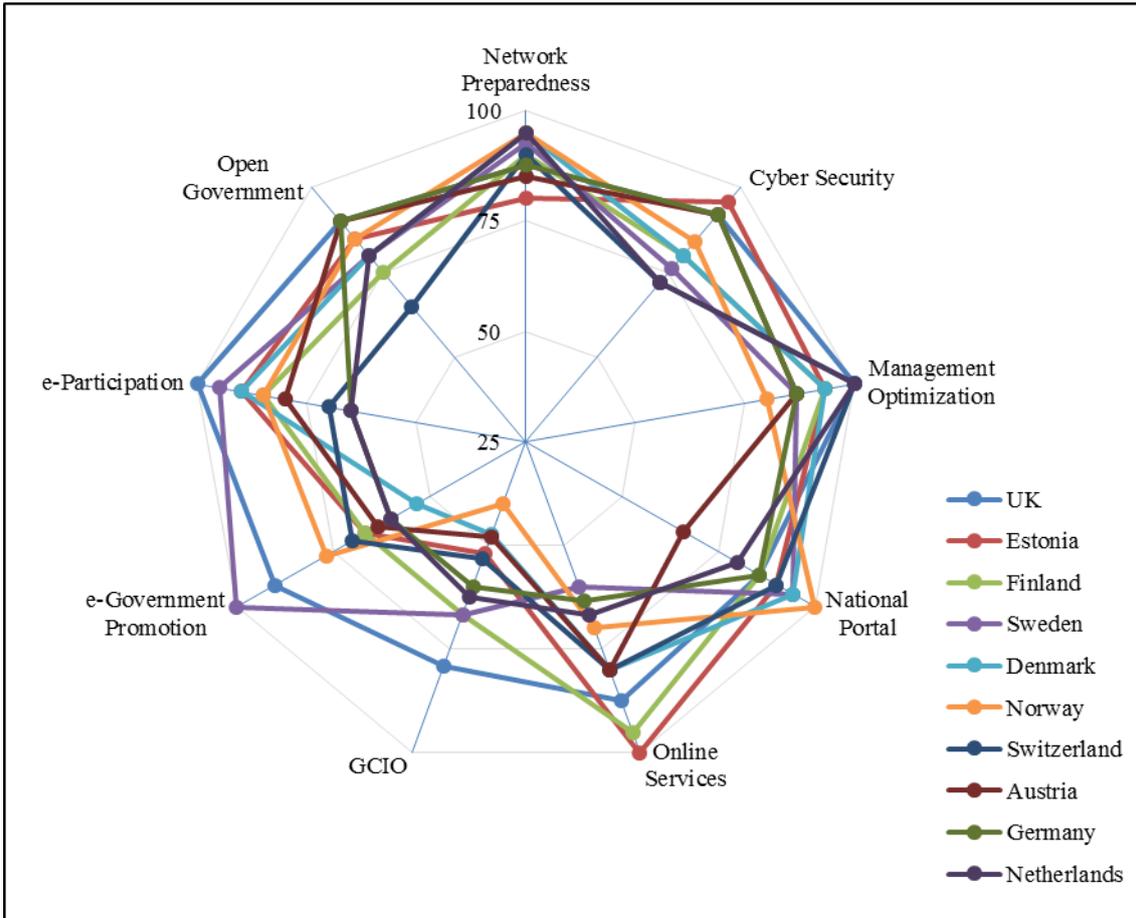
EU Countries			EU Countries			EU Countries		
No	Countries name	Score	No	Countries name	Score	No	Countries name	Score
1	UK	90.40	7	Switzerland	77.30	13	Belgium	69.97
2	Estonia	84.41	8	Austria	76.66	14	Spain	69.66
3	Finland	82.69	9	Germany	75.97	15	Portugal	66.84
4	Sweden	81.93	10	Netherlands	75.80	16	Czech Republic	61.18
5	Denmark	79.06	11	France	74.48	18	Poland	52.06
6	Norway	77.97	12	Italy	72.80	19	Romania	50.66

**Table 13: E-government ranking in European Countries**

The UK consistently exhibits advanced development in e-government, and the government is firmly committed to delivering public services online. The UK's objectives are to fulfill the needs of their users and to achieve maximum economic value for the taxpayer. Recently, the focus has shifted to enhancing productivity and effectiveness through the use of ICT. A new strategy was set up in March 2011 to implement this idea.

E-government in Estonia is predicated on a forward-thinking ICT vision, based on the beliefs that the country is a constantly progressing, inclusive society, striving to raise the living standard of every citizen, and that the wide implementation of ICT services will improve citizens' quality of life and actively involve them in public life. Thus, the strategy emphasizes the development of a citizen-centric and inclusive society, a knowledge-based economy, and transparent and efficient Public Administration.

Finland has been working on e-government implementation since 1994, when a strategy for information management in government was adopted by the Finnish Government. To date, Finland has succeeded in providing proactive public e-services and information to its citizens. Finland continues its e-government implementation efforts by demonstrating constant improvement of interoperability, coherent enterprise architecture development, and increased cooperation between state and local authorities in relation to Information Society issues.



**Figure 18: Top 10 E-Government Ranking in European Countries**

**4. Ranking in Africa, Middle East and CIS Countries**

Africa, Middle East & CIS		
No	Countries name	Score
1	Israel	68.18
2	Turkey	62.65
3	UAE	60.84
4	Russia	59.83
5	Saudi Arabia	56.18

Africa, Middle East & CIS		
No	Countries name	Score
6	South Africa	55.22
7	Nigeria	50.62
8	Kazakhstan	49.08
9	Tunisia	46.51
10	Georgia	44.15

Africa, Middle East & CIS		
No	Countries name	Score
11	Egypt	41.37
12	Kenya	40.72
13	Uzbekistan	32.59
14	Iran	29.02

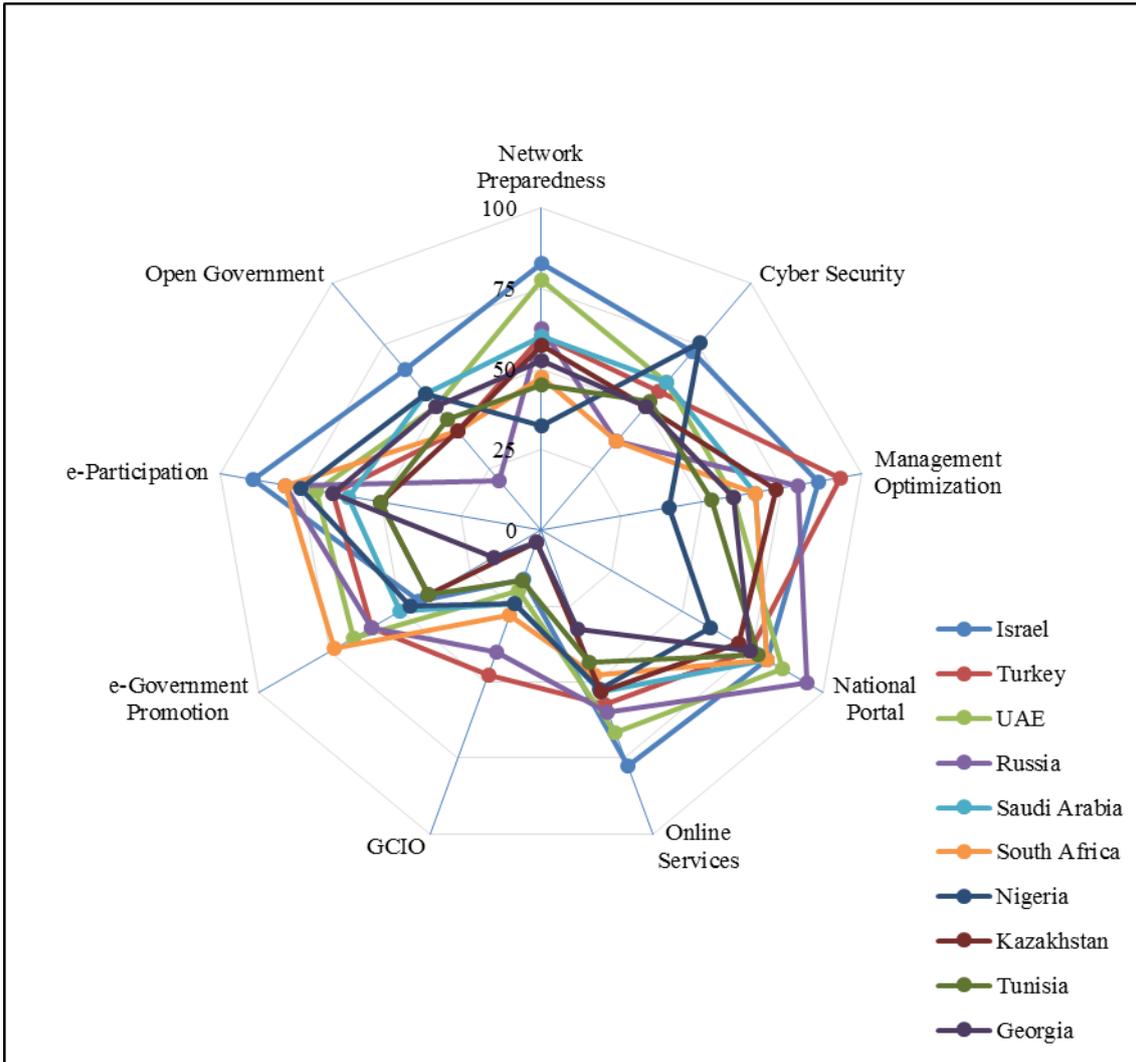
**Table 14: E-government ranking in Africa, Middle East and CIS Countries**

This group includes countries from Africa, Middle East and CIS, included new country – Kenya, this group ranking has fourteen countries. In this group, Israel tied in the 1<sup>st</sup> place, followed by Turkey in 2<sup>nd</sup> and UAE in 3<sup>rd</sup>. The leading of Africa is South Africa, stood in 6<sup>th</sup> followed by Nigeria in 7<sup>th</sup>, Tunisia in 9<sup>th</sup>, Egypt in 11<sup>th</sup> and Kenya in 12<sup>th</sup>. In the bottom of this group is Uzbekistan and Iran. These countries are also in the bottom of the overall ranking.

In recent days Israel has stepped forward in e-government services and joined the top 20 countries according to the United Nations report. The strong effort and dedication in providing its citizens all information access and transparency and citizen participation in government has helped Israel advance to join the top leaders in e-government. Started e-government projects as early as 1997, now Israel is a more advanced country in e-government development compare to others in this group region. In the next years, the Israel government intends to focus on personalization government portal for Israeli citizens (my.gov.il); deployment of Smart-ID card for all citizens; developing new cross-government applications; develop infrastructure for cellular e-government; deploying digital signature in all government forms and upgrade all government websites with web 2.0 tools.

Although Turkey has engaged in obvious intensive e-transformation, in many cases, this has resulted in fluctuating initiatives. From the citizen point of view, despite actions already taken, there is still a shortage of enabling services and a lack of e-inclusion which is a barrier to achieving an information society. However, it is observed that national portal functionality and increased maturity of required interface services are the top two significant changes among other indicators within a year. In terms of public administration, there have been many collaborative actions among ministries and institutions, which is an essential indicator of interoperability. However, according to various assessment reports; human resources management, organizational cultural differences and regulations for clear management remains being weak points of Turkey's e-government transformation. Having enterprise architecture framework; and new channels to better communication and maintain implementation knowledge among agencies would be remaining challenges for administration (Turkey country report 2014).

E-government in Iran has been well developed with five thrusts and six programs. The five thrusts are “(1) Increasing government efficiency and effectiveness, (2) Providing convenient access for all, (3) Improving public services, (4) using ICT and Telecommunications to build new capabilities and capacities, and (5) Promoting social welfare, awareness and knowledge in the society.” The six programs are (1) Central Servers; (2) Government Data Network; (3) National Data Services; (4) Business Systems; (5) Security Strategy; and, (6) Technology Experimentation. E-Government in Iran aims to deliver services to three main groups: (1) citizen (G2C), (2) business (G2B) and (3) employees (G2E).



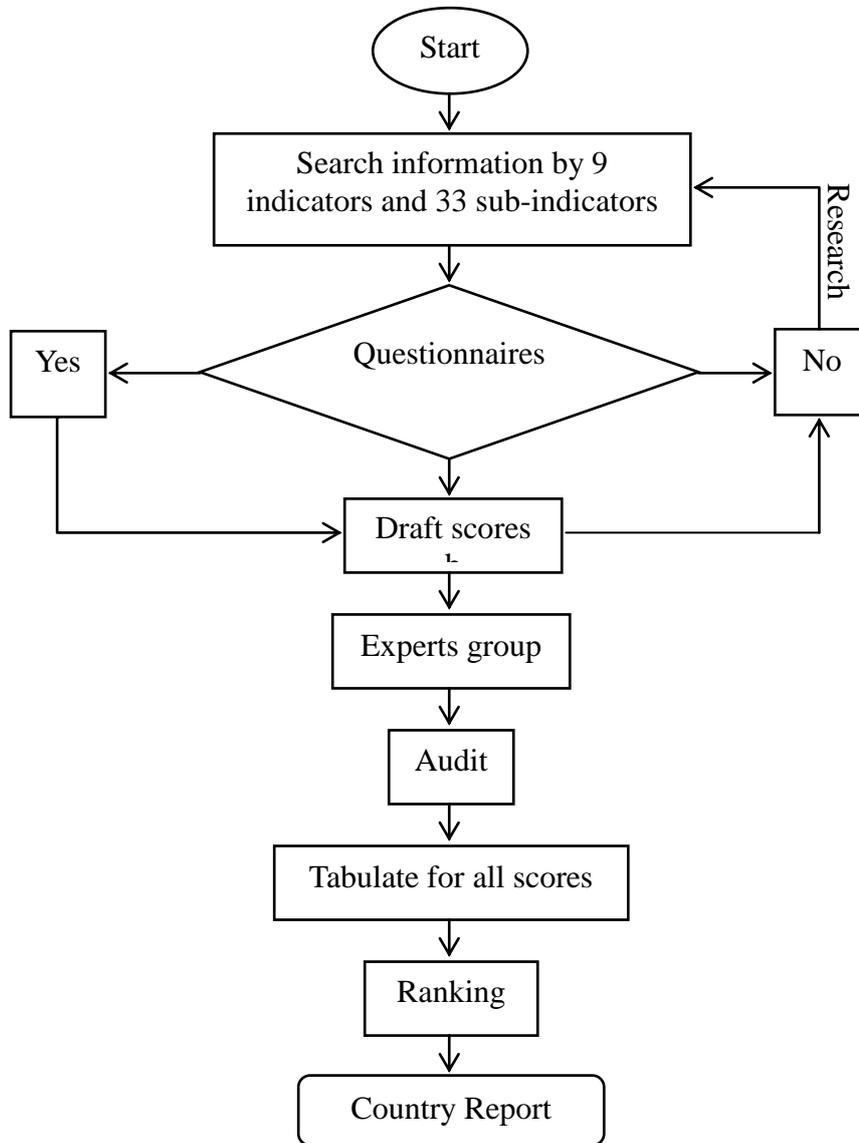
**Figure 19: Top 10 E-Government Ranking in Africa, Middle-East and CIS Countries**

## VII. Methodology

The Waseda – IAC joint E-Government Ranking survey is a measure of evaluating the application of ICT in administration and leadership of each government. It also provides a uniquely perspective to assess the development of e-government from a sampling of countries across the globe thereby enriching the existing body of literature on e-government studies. The objective of the ranking is (1) to share the common benefits to the participating countries, (2) to show the progress of e-government development in a country, (3) to describe the trend of e-government development, and (4) to be the most cited report by researchers and scholars.

The Waseda – IAC joint E-Government Ranking survey is based on analyzing the development of mainly 9 major indicators and 33 sub-indicators in the public sector, as

well as the relationship between governments and their stakeholders. They include: (1) Network Preparedness; (2) Management Optimization; (3) Online Service; (4) National Portal/ Homepage; (5) Government Chief Information Officer; (6) E-Government Promotion; (7) E-Participation/ Digital Inclusion; (8) Open Government/ Data and (9) Cyber Security. To evaluate data, this survey is based on the following flowchart:



**Figure 20: Processes Diagram**

In addition to the research team of Waseda Institute of e-Government. There are 11 prominent academia from 11 world class universities in 11 countries under the umbrella of IAC who have served as global experts group for advising and monitoring the survey.

For evaluating the framework of researches, to check and review the methodology, indicators and targeted countries as well as monitoring 61 country reports for 2014 edition, two global Experts group meetings were organized by Waseda Institute of E-Government and IAC in Beijing in September and in Bangkok in November 2013.

Also, Researchers have attended many international meetings/workshop/forum in Helsinki Seoul, Bangkok, Beijing, Geneva, New York and Paris as well as Tokyo as home ground in 2013/14.

Mathematically, Statistics of the Waseda – IAC E-Government Ranking is a weighted average of the nine indicators scores. The scores are based on the table below:

No	Indicators	Raw score	Max raw score	Max weighted score	Scoring parameters	Final score
1	Network Preparedness	A	30	5%=W1	$W1/30*100 = X1$	$A*X1$
2	Management Optimization	B	15	12%=W2	$W2/15*100 = X2$	$B*X2$
3	Online Service	C	40	15%=W3	$W3/40*100 = X3$	$C*X3$
4	National Portal	D	35	8%=W4	$W4/35*100 = X4$	$D*X4$
5	Government CIO	E	25	12%=W5	$W5/25*100 = X5$	$E*X5$
6	E-Government Promotion	F	30	10%=W6	$W6/30*100 = X6$	$F*X6$
7	E-Participation	G	20	10%=W7	$W7/20*100 = X7$	$G*X7$
8	Open Government	H	20	10%=W8	$W7/20*100 = X8$	$H*X8$
9	Cyber Security	I	25	10%=W9	$W7/20*100 = X9$	$I*X9$
Total score:						$\Sigma$

**Table 15: Weighted Scores Method**

## VIII. Findings

The Findings throughout ten years of survey are showed as follow:

1. One-stop Service	5. Open Government Data
2. E-local Government linkage with Central Government	6. The role of Government CIO
3. Social Media as an alternative channel for the citizens' opinions citizens'	7. Cyber-Security issues
4. E-government development model	

## 1. One-stop Service

During ten years of Waseda-IAC E-Government Ranking, this survey ranking found that all countries in the top ten of overall e-government ranking have very good integrated services to citizens and businesses, that known as one-stop service or one-door service. In public sector, this means that the government makes all services via one portal; in e-government one-stop service is integrating all services and making them accessible via one gateway. Originally, one-stop service denoted a physical location where users (i.e. citizens or organizations) could settle all of their public administration matters in one place and, preferably, with one contact.

We cannot deny the role and the convenience of one-stop service, it can offer many benefits to users for public services—from citizens and businesses to the public administrators themselves—including faster, cheaper and superior services. The benefits of one-stop government service—in the form of direct cost savings, as well as improved perceptions of government efficiency on the part of citizens—are already being reaped by governments with these systems in place. In other words, implementation of the one-stop service model can pay instant dividends. Applying one-stop service is a win-win for all, delivering benefits for both customers and government (One-stop shop plan 2013-2018, Queensland Government).

The national portals of both Singapore and US are typical for one-stop service development. Both national portals serve as a convenient gateway for citizens to find information about the government activities. They present a wide range of information resources and online services from various government sources, all accessible from a single gateway.

United States, Switzerland, and Singapore have the system that is connecting their government information system. In recent years, Thailand and Estonia have shifted their e-government development into the next stage for achieving connected government. Estonia has X-Road project and Thailand has Government Information Network (GIN). These projects are aimed to strengthen and improve inter-government collaboration by centralizing the common e-government services.

X-Road project is aimed to build Estonian National database. The project includes the software development, hardware installation, and organizations methodology. All ministries should connect to the central database through X-Road intranet channel. Citizens can enjoy their current data using internet connection via web portal in many places. This project is managed by Ministry of Transportation and Communication (Estonian Information System's Authority 2013).

GIN is initiated by Electronic Government Agency (EGA), a government agency under supervision of Ministry of Information and Communication Technology (MICT). The concept of GIN is to reduce process redundancy in government agencies. In order

to do so, EGA integrates the common services which are found in different agencies into GIN. Therefore, government agencies are not necessary to fully develop their own information systems. Some of the functions are centralized available through GIN (Jirawannakool 2013). Based on these practices, the common style for integrating e-government services is the centralization network.

Inter-government collaboration should be considered as the new indicator. Some countries have shown that integrating government information system is the requirement to create one stop service in which the processes that include one or more government institution are seamless. By putting this as a new indicator, it is possible to assess the level of e-government development up to the connected stage.

Centralization is the common model in countries for integrating the government information system: Thailand and Estonia have initiated the projects that are aimed to integrate the government service. These projects adopt the centralization model for integrating the government services. In the model, the common services are provided by the GIN in Thailand and X-Road in Estonia. As for the X-Road, the database is also centralized under the X-Road Project.

## **2. E-Local Government Linkage with Central Government**

The relationship between federal and local governments is critical for the stability and prosperity of any country and draws a wide concern from the political and academic spheres. The data collaboration between central governments and local governments is the ultimate strategy to crosscutting the time of delivering services to citizens. In addition, persistence collaboration will strengthen the monitoring process due to cross review from peers. Overemphasis on the centralization of authority is not good for the fully play of enthusiasm of the local government, whereas over-devolution of powers is not favorable for the stability and prosperity of the nation.

Based on the results of ranking throughout ten years surveyed, this research believes that the relationship between local and central government in e-government development in each country is becoming very important indicator. All countries in the top ten of overall ranking have an excellent connection among its governments. They have strong local/regional governments, for example, in Europe, the role of Digital Cities has been a broadly recognized by e-government development paradigm. Municipalities are often the governmental level that is the closest to citizens, while still maintaining an adequate population base to justify large investments. The reason for concentrating on the coordination between all levels of government is that most online public services are managed and delivered at a local level, though central coordination and standard-setting are crucial for an effective implementation of e-government.

The linkage between local and central government in US is the typical example for this issue, The US e-government website gives a broader definition of

Government-to-Government, including its benefits on the national security and a more trustworthy mean that can really help PAs to be more efficient: “Many citizen services such as Homeland Security and verification of vital records require collaboration between Federal, State and Local governments. The goal of the Government to Government (G2G) portfolio is to forge new partnerships among levels of governments. These partnerships will facilitate collaboration between levels of government, and empower State and Local governments to deliver citizen services more effectively”.

### **3. Social Media as an Alternative Channel for the Citizens’ Opinions**

Many countries either developed or developing countries have enriched their national and local portals with the feature of social media. They have their official account on certain social media portals such as Facebook, Twitter, and YouTube. Singapore has its own portal [www.gov.sg](http://www.gov.sg) with the link to YouTube ([www.youtube.com/govsingapore](http://www.youtube.com/govsingapore)) and Twitter ([www.twitter.com/govsingapore](http://www.twitter.com/govsingapore)). Thailand use Twitters ([www.twitter.com/ThaiKhuFah](http://www.twitter.com/ThaiKhuFah)) and YouTube ([www.youtube.com/channel/UCbv4vCq45XZotSoWd8u485A/videos](http://www.youtube.com/channel/UCbv4vCq45XZotSoWd8u485A/videos)). Other countries have the similar initiatives. The use of social media will attract the citizens to freely express their opinions about how their government would do.

Integrate the e-government application with social media for building the e-community: As a part of community, e-government should use social media as the additional channel for obtaining citizens opinion and to inform the citizens about government activities. However, due to the security and privacy issues, it is suggested that the use of social media should be limited to non-financial transaction. It is not a good practice to use social media for delivering the services.

### **4. E-government Development Model**

From the experiences analysis on the e-government development in many countries for ten years, there are patterns of how the countries develop their e-government for improving the public services. There are two priorities in country for developing e-government. The first is the network infrastructure as the foundation for delivering the government services to the public using ICT. The second is the improvement of government business process as the foundation of government service quality.

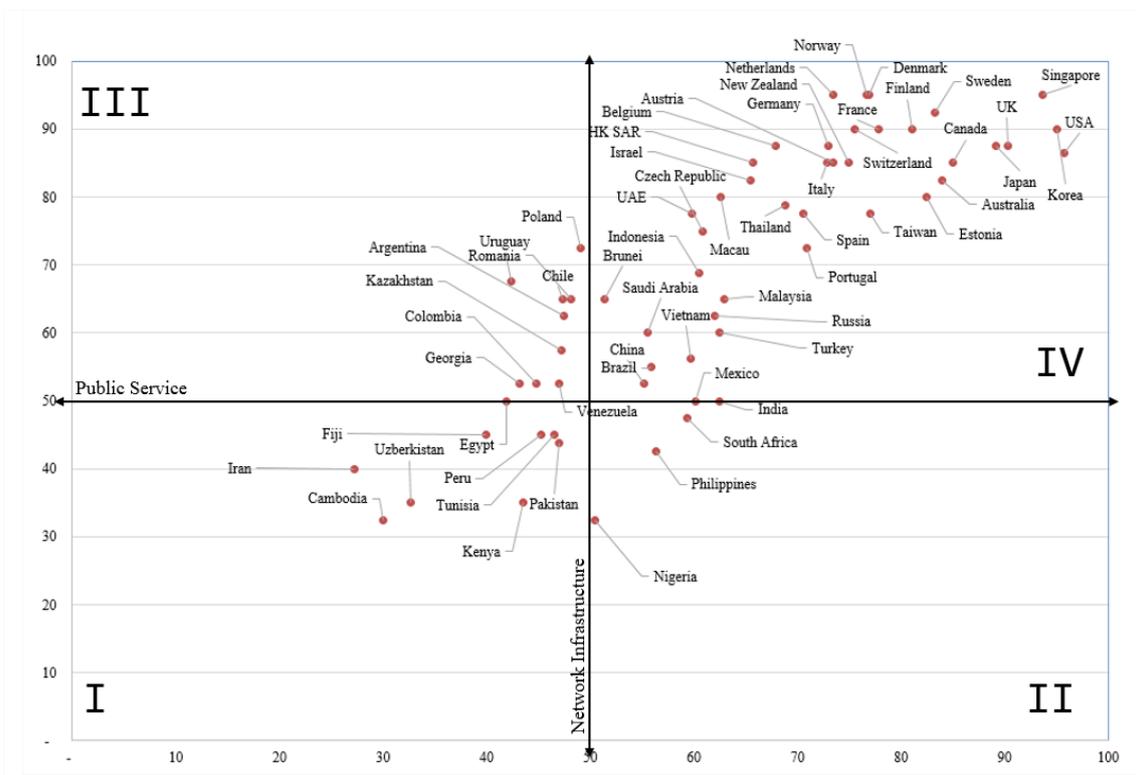
Some countries have prioritized the development of network infrastructure to increase the internet penetration and to provide the public with the access to government information securely using internet. In the first 3 years of developing this ranking, the concern by most countries is the digital divide. Most countries have focused on any initiatives to bridge the gap between the people who can take the benefit of internet and those who cannot. Country such as Singapore, Korea, Estonia, Hong Kong and

Netherlands with relatively small population and geographically not-scattered area tend to be successful for doing so.

In contrast, some developing countries with high population and vast area such as India, Indonesia, and China have difficulties to increase their internet penetration. However, to improve the public service, those countries have emphasized on improving government business process while gradually increase the internet penetration.

The survey in 2014, these 9 indicators can be categorized into two dimension; Network Infrastructure and Public Service. The categorization is based on commonalities in various definition of e-government which are the use of ICT in government and the public service of government. Network Infrastructure is for Network Preparedness and Cyber Security while Public Service is for other seven indicators.

The following figure show the country’s positioning among them. The graph is developed by accumulating the score of all indicators into respective dimension and setting these two dimensions as the XY-Axis. By putting a vertical and horizontal line on the middle of XY Axis, the countries can be clustered into four quadrants.



**Figure 21: E-Government Development Matrix**

Quadrant I shows the countries with low internet penetration and lack of e-government application for public service. Quadrant II shows the countries that focus on improving their public service using e-government applications despite their lack of network infrastructure. In contrast, quadrant III shows the countries that focus on

increasing the internet penetration and strengthening the network infrastructure. These countries were found lack of public service but strong in internet accessibility during the survey. Quadrant IV is a cluster for countries that reaches the high network infrastructure and improves public service through e-government applications.

Using this matrix, the countries in quadrant I can choose the appropriate priority on their e-government development process, as they will proceed to either quadrant II or quadrant III.

Prioritization on e-government development process: No matter a country is either a developed or developing country, the prioritization on e-government development process is a mandatory task. There are only two domains for a country that should focus on, i.e., Improving Network Infrastructure and Public service. E-Government Development Matrix should be used by countries for helping them to improve their e-government development. The matrix provides them with the insight of the path to gradually move to quadrant IV. For instance, countries in quadrant I can choose either emphasizing the network infrastructure or public service. As for countries in quadrant II, they can shift the priority to strengthen the network infrastructure. The matrix is also useful for maintaining the quality of the ranking and continuous improvement of e-government.

## **5. Open Government Data**

Since US President Obama signed the Memorandum on Transparency and Open Government and the launching of the first open data portal (data.gov) in 2009, the open government agenda has gained momentum over the past years as a famous trend in e-government progress. It is now widely acknowledged that there are an increasing number of countries launching similar open data initiatives. See more lists about Open Government Data Portal on Appendix 3.

During one year of research, this research found that most of Open Government Data (OGD) portal use only the native language. Some portal has added the search engine and the dataset categorizations. For the dataset, there are commonalities among others in term of data format. Most of them use a downloadable well-known file format, i.e., pdf, xls, csv, and xml. Some governments provide the forum to drive citizen to request new OGD format type.

The top ranking countries on this indicator have provided the citizens with an application programming interface (API) that could help developers and researchers to create innovative citizen-centric applications. There are a number of small-scale utilization cases and application for smartphone and tablet.

For International Corporation, Open Government Partnership (OGP) was launched in 2011 to provide an international platform for domestic reformers commitment to

make their governments more open, accountable, and responsive to citizens. As per 2013, there are 63 participating countries in OGP. One of the initiatives of OGP is the G8 Open Data Charter. It was signed on June 2013 at UK as a set of principles and foundations for access, release, and re-use of G8 government data.

## **6. The Role of Government CIO**

During the period from 2005 – 2014, it is not difficult to recognize that top 10 countries in the total ranking table have high score in the Government CIO indicator, due to the fact that this indicator is one of the most important factor in the ranking system. USA, Singapore, Canada and Korea are those nations who constantly persist in the top 3 standing of CIO through 10-year period. This is not surprise when obvious evidences have been found about the existence of legislations, regulations or policies which were created in order to explicitly mandate and identify the role of government CIO as well as the utilization of CIO training programs in those countries. The CIO Council of the United State has released the Clinger-Cohen competencies from 2004 and continuously updated which describes various qualifications of a CIO. This set of competencies becomes a standard for CIO selection in other countries. In addition, the presence of chief information officer in different levels of government, from national to local government is another crucial factor in e-government development of countries in the top 10. For those countries with high level of decentralization (USA, Australia etc.), the role of state or regional CIOs is emphasized with more duties are given from strategy planning, projects management to administrative reform.

The aforementioned period also witnessed the cognitive shifting in the role of government CIOs. The chief information officer's responsibilities are no longer limited around technical aspects but extended to handle more nontechnical tasks such as policy planning, budget management, and IT investment in order to “achieve a balance between the business strategy, organizational reform, and management reform”. With the purpose of obtaining a consistent ICT policy, many countries have their CIO offices associated with finance department such as in Australia and UK or improve the power for the CIO Council (Japan).

## **7. Cyber-Security Issues**

The 2014 is the first year cyber-security becomes one of the core indicators to evaluate e-government development. The emerging trends in IT and security are reflected in the ranking system since top 10 countries in cyber-security have an adequate legislation framework, effective cyber-crime countermeasure solutions and powerful security organizations. Many countries in the middle or bottom of the ranking table have seen implemented online service system but still lack of fundamental security protocol (https, two-way authentication) and this could lead to the low level of trust in using online service of citizen or business.

Governments in the world are investing their budget in strengthening the cyber security defense system against the increasing of security issues as cyber-crimes, cyber-attacks, copyright violation, and privacy penetration. The solutions include enhancing the legal framework (personal information protection, and electronic transaction), building national strategy on cyber security, and improving security awareness of government, business and citizen. The top missions of national security agencies are not only identifying top cyber threats and trends and categorizing those threats into different warning levels but also proposing a standard procedure to response.

The inter-cooperation between security organizations in different countries is considering an effective way in digital defending. The European Union Agency for Network and Information Security (ENISA) is an example of a cross-border center of network and information security expertise, which promulgating common security as well as supporting the collaboration in government policy and facilitating preparedness and knowledge sharing between EU member states.

Developing a well-suited e-government program, in order to obtain the best result in e-government development, each country should identify different success factors as well as the barrier of e-government adoption process. The factors may come from different domains such as technological (ICT infrastructure), organizational (effective management, leadership, and agencies linkage) or environmental (regulation framework, political support, and national culture). By identifying the critical elements that fit into each country scenario would help policy makers making reasonable and more effective decisions. Furthermore, e-government development is a long term process. It therefore requires a well-organized strategy involving in different stages with well-defined targets for each stage. The cooperation between agencies for a common purpose is also essential for an effective, high return value e-government project.

## **IX. New Trends in E-Government Development 2014: 9 Global Highlights**

There are ten global highlights as new trends in e-government development as follows:

1. Cloud Computing	6. Digital Inclusion in Aging Society
2. Social Media	7. Cyber Security
3. Open Government Data	8. One-stop service and Interoperability
4. Big Data	9. E-local Government and Smart Cities
5. Business Continuity Planning (BCP) in Disaster Management	

## 1. Cloud Computing

The major role of cloud computing in the Information Age cannot be denied. Recently, the critical role of cloud computing has been discussed in many conferences, journals, and articles (both academic and non-academic). Cloud computing has many advantages, including cost efficiency, scalability, and increased availability, which make cloud business appealing in many sectors. Due to the budget constraints of many governments, the particular advantages of cloud computing also appeal to the public sector. In 2010, recognizing the importance of cloud computing and its benefits to the public sector, the European Network and Information Security Agency (ENISA) put cloud computing on its current and emerging research trends list and the European Commission explicitly referred to cloud computing in its Digital Agenda for 2020.

Singapore's Government Cloud, or G-Cloud, is a prime example of the development of cloud computing in the public sector. The G-Cloud truly represents the next generation of online infrastructure. It leverages the many benefits of cloud computing to provide resilient computing resources to meet security and governance requirements on a whole-of-government basis. Agencies can currently subscribe to a full range of infrastructure-as-a-service options for hosting government websites and e-services (Singapore national portal).

According to EUPractice.eu, a local government in Denmark began discussions on using cloud computing in the public sector as early as 2009. According to KPMG, Denmark is one of the leading countries in public-sector adoption of cloud computing. In 2011, for example, a Danish municipality announced plans to use Google Apps services such as Google Calendar and Gmail in their school systems. In addition, a Danish procurement organization in a Danish municipality transferred procurement services into the cloud in 2011.

France is currently one of several countries in favor of the development and installation of a nation-wide cloud for governments, a so-called G-Cloud (Governmental Cloud). France began development of its G-Cloud, "Andromeda," in 2011. This particular G-Cloud serves as an IA platform for governments. The main aims for developing a G-Cloud in France are data protection and legislative issues.

In Germany, according to the Federal Ministry of Economics and Technology (BMWi), cloud computing is one of the main pillars of the German Federal Government's ICT strategy. This strategy was created by the Federal Ministry of Economics and Technology in 2010 and sets the course for the digital future of Germany through 2015. The objective is to facilitate and foster the development and installation of cloud computing services. In particular, it encourages both small- and medium-sized enterprises and the public sector to take advantage of cloud computing as rapidly as possible (Digital Germany 2015).

In 2011, the United Kingdom Government published an ICT strategy which prominently featured cloud computing. This strategy proposed the implementation and installation of a G-Cloud in the UK. The main objectives of this G-Cloud are reducing ICT costs for governments, optimizing the use of remote data center infrastructure, and increasing public sector agility (ICT Strategy 2013).

The next trend in cloud computing will be its convergence with mobile technology. They are converging to create a new platform—one that has the potential to provide unlimited computing resources. Mobile devices are constrained by their memory, processing power, and battery life. But combined with cloud computing, data processing and storage can occur remotely from mobile devices. What IDC calls the "Third Platform" will allow for better synchronization of data, improved reliability and scalability, increased ease of integration, anytime-anywhere access to business applications and collaborative services, rich user experiences, and an explosion of new services (IEEE, 2014).

## **2. Social Media**

Recently, social media has become a platform that is easily accessible to anyone with an Internet connection and has become a favorite communication channel for many people. It also has a significant impact on the way governments are doing business and how they perform. For transparency reasons, governments need to be more interactive and reach citizens where they are and where they feel most comfortable. Also, social media represents a strategic opportunity that should be cautiously managed to better engage individuals, businesses and public organizations.

The current trend in leading governments is integrating social media with e-government services. Government can use social media to connect with citizens or businesses to exchange information. Social media has substantially changed the way that organizations, communities, and individuals communicate (Trisa D.B, 2012). Social media provides a powerful platform to help governments communicate directly with constituents and increase their Web presence.

Use of social media in government agencies has facilitated direct interaction between citizens and administrations. The transformation of government policy and behavior is important in creating a proper information sharing hub. In the United States of America, the government has to plan strategic guidelines for applying social media in the public sector. The Federal Government has become more and more involved with the use of social media. Currently the US Government is using three social networks, Facebook, Twitter and LinkedIn. There are currently over 468,000 people who have liked and followed the US Government's Facebook page (US National portal). This enables the government to disseminate a large amount of information directly to citizens.

Useful information such as the location of Embassies or important events is one way the government is informing people via social media.

### **3. Open Government Data**

Providing open government data is fast becoming a major political objective and commitment in many countries. Its implicit promise to support economic growth and to improve public services, as well as to promote government transparency and accountability make it an attractive policy objective. While many governments are rushing to launch political initiatives and online portals, the majority have yet to demonstrate the full benefits of open government data, let alone make the necessary preparations to realize those benefits (OECD Open Government Data).

The United States was one of the earliest countries to deploy an Open Government strategy and to wield this strategy effectively. President Obama has prioritized government openness and accountability and has taken substantial steps to increase citizen participation, collaboration, and transparency in government (Nick and Gayle). Data.gov, the central site for US Government data, is an important element of the Administration's overall effort to open government. It launched in May 2009 with numerous datasets, and as of October 2013, the US Government had published 98,852 datasets. One of the best open government practices in the US is the Climate Corporation, which was founded in 2006 and is growing rapidly. The Climate Corporation provides Federal crop insurance based on acreage premiums. In December 2013, the US Government released the Second Open Government National Action Plan, which describes how the goals of the Open Government Partnership—transparency, participation and collaboration—will be executed and reports on the statuses of various initiatives.

In the United Kingdom, the government describes itself as “the most open and transparent government in the world.” Open Government establishes a platform for independent and collaborative action involving citizens, civil society, private companies and public servants (UK National Action Plan 2013 to 2015). Transparency, participation and accountability provide the essential foundation for economic, social and political progress by increasing the openness of institutions and public processes while maintaining and respecting the privacy of individuals. The UK is leading the world on open data. Their web portal—data.gov.uk—is already the most comprehensive data resource in the world with more than 10,300 data files. The government is working closely with businesses and charities to identify new public data to release. From apps that tell passengers when the next bus is due, to a small analytics business that has identified hundreds of millions of pounds of potential savings in the health system, transparency is helping to improve people's lives and boost economic growth.

In Japan, the Japanese Government has three open data sites: a government portal site (data.go.jp); METI's portal site (Open Data METI); and Shizuoka's prefectural portal site (Open Data Catalog Shizuoka). The best open data site in Japan is the book search service called "Calil." Using this service, anyone can search through the books of 5,200 libraries in Japan and check the availability of their preferred books.

#### **4. Big Data**

The evolving ICT used in e-government services includes many components such as network infrastructure, hardware, software and platforms. Government work processes are now integrated into end-to-end public access and social administration services, so e-government models must focus on the concept of Big Data. For example, the Obama Administration recently unveiled its Big Data Research and Development Initiative to "improve [American] capability to extract knowledge and insights from large and complex collections of digital data; harness these technologies to accelerate the pace of discovery in science and engineering; strengthen national security and transform teaching and learning." (Huawei, 2013) The Administration also announced \$200 million in new Big Data-related R&D investments.

Big Data processing enables governments to make choices based on large-scale quantitative analysis. Goals include achieving greater policy transparency, and identifying optimal social and economic value. More broadly, data mining aids decision-making via the discovery of patterns in large data sets based on facts and observations. Data mining tools can process structured numeric data in traditional databases or extract relevance from semi-structured and unstructured data, such as text, graphics, images, and web data. Leveraging Big Data can enable breakthroughs in e-government management, where, like many industries, governments can use Big Data to identify opportunities for innovation, and to act on the best information available.

In the United States, a new joint venture supported by the National Science Foundation (NSF) and the National Institutes of Health (NIH) will advance the core scientific and technological means of managing, analyzing, visualizing, and extracting useful information from large and diverse data sets. This will accelerate scientific discovery and lead to new fields of inquiry that would otherwise not be possible. NIH is particularly interested in imaging, molecular, cellular, electrophysiological, chemical, behavioral, epidemiological, clinical, and other data sets related to health and disease.

In Europe, the European Commission developed an open data portal site for all types of information held by the Commission and other EU institutions and bodies (Digital Agenda for Europe 2020). The Open Data Portal—hosting data from the Commission and from the European Environment Agency—went live in December 2012. Data.gov.eu is a proposed EU portal that would aggregate various national efforts. Data from across the EU would be catalogued and searchable using standard formats. It

would also host applications that could organize and arrange the data for practical purposes. It would connect communities of developers and users, organizations and individuals, and private and public bodies from across the EU as they employ and utilize the data as they see fit.

## **5. Business Continuity Planning (BCP) in Disaster Management**

As e-government information systems develop, information security has become a critical issue. Information security is the issue that most consistently restricts the smooth implementation of e-government. The goal of e-government security is to protect e-government information resources from threats, and to minimize the risk that owners of information assets face. BCP for e-government seeks to develop comprehensive business continuity planning in advance, then to prevent and/or efficiently manage the consequences of various disasters. BCP must predict the potential risks, establish adequate plans and preparations, and implement procedures for resuming business following a disaster. These measures will ensure the continuity of e-government functions by managing risks and establishing best practices of risk management, preparedness, prioritization, and disaster response. In short, BCP is a process of preparation which estimates the risk of unplanned events and ensures that core business functions proceed without interruption even when disaster strikes.

As a central element of information system security, BCP in e-government must concern itself with risk management. E-government based on information security risk management must identify, control, reduce and eliminate potential information system security risks in a cost-efficient manner. Information security risk assessments must consider the probability of various security incidents, as well as the resilience of the system to minimize the consequences of each incident.

BCP plays an important role not only in the public sector but also in the private and business sectors. In developing countries, where many e-government projects have failed, both risk assessment and mitigation are essential. Risk assessment can be carried out by analyzing the gap between current reality and the design assumptions of an e-government project. For example, in the aftermath of terrorist incidents and recent natural disasters such as the March 11th, 2011 earthquake in Japan, or the October 2011 floods in Bangkok, both governments and businesses have become acutely aware of the need for enhanced disaster preparedness. Companies are striving to meet the demand for continuous, uninterrupted services. With the growth of e-commerce, e-government and other factors, system availability expectations are driven toward 24/7/365 coverage. To enhance the security and continuity of all online services and databases, it is necessary to make BCP disaster management a top priority.

Risk assessment is the basis of risk management, and it entails a full, comprehensive assessment of the assets, threats, vulnerabilities and existing security

measures in a government information system. Risk management consists of three parts: risk assessment, risk minimization, and risk-based decision-making.

In the private sector, business recovery involves restoring the normal operational flow, which is extremely time-sensitive. Recovery may occur immediately after a disruption, or may follow an acceptably brief period to backup data. Data must be assessed frequently for accuracy and availability. These proactive checks are essential because they become impossible to perform in the midst of an emergency.

## **6. Digital Inclusion in an Aging Society**

The e-government concept of Digital Inclusion refers to both inclusive ICT and the use of ICT to achieve wider inclusion objectives. It focuses on the participation of all individuals and communities in all aspects of the information society.

One of the problems that many countries are facing today is an aging population—in other words, an increase in the proportion of older people (Japan is a typical example). This trend necessitates increased funding for social welfare programs and support for government services. ICT can be applied to alleviate many of the issues caused by a rapidly aging population, even in a global context. For instance, ICT can help to provide new and flexible learning opportunities, which connect senior citizens with each other and offer a link to younger generations.

E-government can make considerable contributions to the independent lifestyle of the elderly. The physical presence and wait-times at government institutions is no longer necessary, while opportunities for active participation in politics and other civic activities are now easily accessible. Exploration of these opportunities for the elderly in the public sphere receives a lot of attention in Japan. Both national and local governments seek measures to transform e-government to meet the specific needs of a growing number of seniors who are willing and economically able to exercise their independence. The transition to an inclusive e-government that serves older generations requires certain basic preconditions to be met.

First, age is a significant demographic variable that negatively correlates with the usage of online telecommunication tools. In other words, older people are less likely to be familiar with computers and the Internet, and are significantly more comfortable using traditional methods of communication with the government. Moreover, applications and services are often designed for a “standard” user and do not sufficiently consider the particular requirements of senior citizens.

Throughout the ten years of Waseda - IAC E-Government Ranking surveys, we have consistently found that ICT applications for aging populations are increasing in importance. Governments must take every opportunity to apply ICT to establish a more digitally inclusive society.

## 7. Cyber Security

E-government operations are faced with ever-increasing citizen demand for more timely and cost-effective services. The security requirements associated with these systems are similar to many e-commerce solutions—in other words, e-government faces the same challenges that faced e-business. Many national governments are embracing the digital revolution to enhance electronic services for their citizens, but the prevalence of online transactions also means that governments have to pay more attention to information security, data protection, and cyber-attack prevention. As the number of e-government services increases, a higher level of e-government security is required. E-government security is one of the crucial factors for achieving an advanced e-government infrastructure.

Cyber-attacks are a serious threat to e-government security in any country. Cyber security is most simply defined as the security measures applied to computers to provide the desired level of protection. The security measures associated with individual e-government systems are similar to many e-commerce solutions. However, the span of control of e-government and its unique impact on its user base makes for a network that is greater than the sum of each individual system. E-government faces the same challenges that faced e-business in the private sector, but the stakes are often higher.

Like other electronic transactions, the rise of e-government leads to unintended security implications and increased vulnerabilities to cyber threats. To face these challenges, governments around the world must develop effective cyber security strategies. One of the crucial and growing concerns on the near-horizon for e-government is information security in e-government applications and infrastructure.

To fulfill its commitment to cyber security, the Japanese Government established the National Information Security Center (NISC) in April 2005 within the Cabinet Secretariat as the command post for information security policy. The NISC is responsible for planning, proposing, and coordinating basic information security measures and strategies for the public and private sectors. It also identifies core and cross-cutting concerns, and promotes best information security practices throughout Japan. In May of the same year, the Information Security Policy Council was established within the Strategic Headquarters for the Promotion of an Advanced Information and Telecommunications Network Society (IT Strategic Headquarters) for centralized/cross-cutting promotion of information security measures in both the public and private sectors. It also works to enhance information security and strengthen resistance to cyber-attacks among government institutions and critical ICT infrastructure providers. In the First National Strategy, information security was identified as a national goal and a framework was established for various stakeholders, including government institutions, critical infrastructure providers and business operators. The Second National Strategy set clear objectives in security and crisis management, and

sought to achieve world-standard ICT capabilities. Specific focuses of these initiatives included preparedness for all cyber threats, and adjustment to environmental changes.

In Korea, the “National Cyber Security Master Plan” was established in August of 2011 in order to protect cyberspace, to clarify the roles of relevant government institutions, and to prepare a system for handling cyber threats at a national level. These threats are becoming ever more intelligent and advanced, and present both economic and national security risks.

In the United States, cyber-security has long been considered one of the most serious economic and national security issues facing the country. Cyber-security threats are treated as the most serious challenges to national security, public safety and economic development in the country's “National Security Strategy.” To this end, the country has established the “International Strategy for Cyberspace,” which presents guidelines for international development of cyberspace that supports international trade, strengthens international security, and promotes freedom of expression and innovation.

The United Kingdom’s 2010 National Security Strategy strongly promoted cyber-sector growth, while recognizing its unique vulnerabilities (The Strategic Defence and Security Review, 2010). As critical data and systems become more accessible in cyberspace, threat detection and defense become more difficult. Based on this fact, cyber-attacks are recognized as a threat of the highest priority. In 2011, in order to counter this threat, the country established “The UK Cyber Security Strategy.” The Strategy outlines the necessity of a vibrant, resilient and secure cyberspace in order to establish more prosperous and secure future, while also maintaining the core values of liberty, fairness, transparency and the rule of law.

In Germany, “The Cyber Security Strategy for Germany” was established in February of 2011 to promote economic and social prosperity by enhancing the integrity, confidentiality, and availability of cyber services. Maintaining security in cyberspace is among the most critical issues in the 21st century, both domestically and internationally.

## **8. One-Stop Service and Interoperability**

A new trend in e-government is integrating all services and making them accessible via one gateway (one-door entry). In the public sector, this means that the government makes all services accessible to all citizens and businesses via one portal. This is often called one-stop government service, or simply one-stop service. One-stop service is one of the most promising concepts of service delivery in public administration. Its implementation is included in the e-government strategies most countries. Originally, one-stop service denoted a physical location where users (i.e. citizens or organizations) could settle all of their public administration matters in one place and, preferably, with one contact. Whether physical or virtual, one-stop government consists of the full integration of public services from a user’s vantage point. Virtually, this integration

occurs mostly in the front-end interface where public services are provided according to users' needs and preferences, while back-end processes are by-and-large left unchanged.

Applying one-stop service can offer many benefits to users of public services—from citizens to businesses to the public administrators themselves—including faster, cheaper and superior services. However, implementation of one-stop government service in its 'true' sense requires interoperability and integration between back-end systems and the front-office side, as well as the full integration of service delivery processes.

A current trend in innovative development is one-stop government service. It refers to a single point of access to electronic services and information offered by different public authorities. Online one-stop government service requires that all public authorities are interconnected and that the customer (citizen, private enterprise or other public administration) (Francesco Amoretti) is able to access public services via a single gateway even if these services are provided by different public authorities or private service providers. A key feature of presenting information and services within a one-stop government system is that the customer does not need specific knowledge of the bureaucratic structure of the public sector. The benefits of one-stop government service—in the form of direct cost savings, as well as improved perceptions of government efficiency on the part of citizens—are already being reaped by governments with these systems in place. In other words, implementation of the one-stop service model can pay instant dividends.

In Netherlands, the federal government has actively supported this model since 1992, when it began funding for four pilot government service centers. In 1996, the 'Overheidsloket 2000' (Public Counter 2000) program was launched. This initiative's goal was to structure the delivery of public services according to demand patterns, and it has funded projects in the areas of citizen registration, welfare, and construction.

In Singapore, the [www.gov.sg](http://www.gov.sg) Portal is the official electronic communication platform of the Singapore government. It is a one-stop government service center where the Singapore government offers all services to citizens, to businesses, to public administrators, and to non-residents. The [www.gov.sg](http://www.gov.sg) portal serves as a convenient gateway for citizens to find information about the Singapore government, such as news and speeches, informational resources, e-services, events calendars and contact information for public agencies. Singapore's well-organized portal serves as a platform that assists the public in finding desired information. To improve users' browsing experiences, the portal also allows them to create government accounts that allow each individual user to customize the portal according to his or her preference. The portal also connects users with social media such as Facebook, Twitter, YouTube and blogging sites, and there is even a customizable feature to receive update notifications via email. The Singapore National Portal uses Web 2.0 technology and combines SNS features

with a user-friendly design. The portal contains many convenient electronic services and various services for finding information (<http://www.ecitizen.gov.sg>).

USA.gov is the United States Government's one-stop service for citizens. It presents a wide range of information resources and online services from various government sources, all accessible from a single gateway. Also known as the US Government's Official Web Portal, USA.gov is a comprehensive tool aimed at improving communication between the government and the public. Moreover, it provides information that helps the public to better understand the government's structure. The well-organized portal serves as a platform that assists the public to find whatever information they desire. To improve users' browsing experiences, the portal also allows them to create government accounts and to customize the portal as they see fit. The US is one of the top-ranked countries for establishing a national web portal. The United States' web portal also uses Web 2.0 technology and combines SNS features with a user-friendly design. It puts many essential government services at users' fingertips and offers access to a wide variety of information (<http://www.usa.gov>).

## **9. E-Local Government and Smart Cities**

The relationship between federal and local governments is critical for the stability and prosperity of any country, and draws wide concern from the political and academic spheres. Overemphasis on a centralized authority can be corrosive to effective cooperation with local municipalities, whereas excessive decentralization of powers can negatively affect the stability and prosperity of a nation.

Wherever e-government is implemented, the relationship between local and central governments plays an important role in the quality of service provided to citizens, business and organizations. As the local delivery of services becomes an ever-greater concern of central governments, the manner in which departments and local governments communicate with one another becomes all the more important. Both communication and engagement between central and local governments are inherently challenging, especially when differences in priorities and ways of doing business create tension. Communication needs to be clear, timely and sensitive to these cultural differences. Moreover, consultations need to be conducted in a way that shows that the central government genuinely desires local input, with enough time for the results to be meaningful, and for local government views to be reflected in the final projects that go forward.

Considering the European context, the three main levels of jurisdiction that should be considered when analyzing e-government are the central, intermediate (or regional), and local levels. In Europe, the role of Digital Cities has been a broadly recognized e-government development paradigm (SDA Bocconi, 2004). Municipalities are often the governmental level that is closest to citizens, while still maintaining an adequate

population base to justify large investments. The reason for concentrating on the coordination between all levels of government is that most online public services are managed and delivered at a local level, though central coordination and standard-setting are crucial for an effective implementation of e-government. Recently, Smart Cities have become increasingly popular because they represent a comprehensive convergence of technological advances and sustainable development.

The relationship between central and local governments in the UK has always been strained. The UK is one of the most centralized democracies in Europe, and as they have no written constitutions, local governments have no explicit right to exist or to self-govern. Every decision is subject to the approval of ministers (Gerald Vermon-Jackson, 2013). The Cabinet Office, which heads efforts for government reform and modernization, is responsible for e-Transformation in Government and the overall e-government strategy. Its Strategy Unit (formerly the Performance and Innovation Unit) has issued several reports on e-government. The Strategy Unit (SU) was created in June 2002 as the result of a merger between the Performance and Innovation Unit (PIU), the Prime Minister's Forward Strategy Unit (PMFSU) and part of the Centre for Management and Policy Studies (CMPS). The Office of the E-Envoy (OeE) is the body that directly coordinates e-government projects and policies. The OeE is part of the Cabinet Office and provides political leadership throughout the government to drive the government's objectives on e-government, e-commerce and the Information Society forward.

The OeE is also directly in charge of the development, implementation and operation of the main components of the national e-government infrastructure (such as the [Ukonline.gov.uk](http://Ukonline.gov.uk) citizen portal and the Government Gateway). All central government departments have been requested to develop and implement a web presence. The Local Government Association (LGA) represents all local authorities in England and Wales—a total of just under 500 authorities. Its aim is to put local councils at the heart of the effort to improve public services and to work with the federal government to ensure that the policy, legislative and financial context in which they operate supports that objective. The LGA supports local authority's efforts to meet the challenges of delivering responsive services to their communities, and places significant emphasis on the role that e-government can play in achieving this vision. In short, the UK's national strategy provides a clear framework and plan of action which local governments can use to orientate their priorities. Moreover, central technical and strategic support is provided in accordance with the national strategy. In this regard, the new concept of Smart Cities will apply state-of-the-art digital innovations to provide local communities with brand new tools and possibilities (<https://www.wrexham.gov.uk>).

## **X. Contributors List (circles ● indicate leader)**

### **1. List of Global Experts Group**

- Prof. Dr. Toshio Obi, Director, Institute of e-Government, Waseda University, Japan, President, International Academy of CIO, Director APEC e-Gov Research Center
- Prof. Dr. J.P Auffret, Chair, MOT/CIO Program of George Mason University, USA
- Prof. Dr. Lim Swee Cheang, Director, Institute of Systems Science, National University of Singapore
- Prof. Dr. Reima Soumi, Turku School of Economics, University of Turku, Finland
- Prof. Dr. Luca Buccoliero, Marketing Department Bocconi University, Italy
- Dr. Elsa Estevez, Senior researcher, United National University, Macao
- Prof. Dr. Suhono Harso Supangkat, Bandung Institute of Technology, Indonesia
- Prof. Dr. Francisco Magno, Director, Institute of Governance De La Salle University, Philippines
- Prof. Dr. Fang Chun Yang, Dean, Academy of e-Government, Peking University, China
- Associate Prof. Dr. Jirapon Sunkpon, Thammasat University, Thailand
- Prof. Dr. Alexander Ryzhov, School of IT management, Federal Academy of National Economy, Russia

### **2. List of Professor and Experts at Institute of E-Government, Waseda University**

- Prof. Dr. Naoko Iwasaki
- Prof. Dr. Takashi Kobayashi, Tokai University
- Prof. Dr. Tatsuyuki Negoro
- Prof. Dr. Yoshio Tozawa, University of Industrial and Science
- Prof. Dr. Kiyoshi Nakamura
- Mr. Iwata, Manager NTT Data
- Prof. Kiyohide Higuchi
- LLC Naoko Mizukoshi, Lawyer
- Prof. Dr. Hiroko Kudo, Chuo University
- Mr. Akira Watari, ex-Director of IT, Toyota Motors

### **3. List of Researcher and Research Assistants at Institute of E-Government, Waseda University**

- Mr. Nguyen Manh Hien
- Ms. Chen Naiwei
- Mr. Bandaxay Lovanxay
- Ms. Gu Siyu
- Mr. Nguyen Ngoc Anh
- Mr. Akinori Miyata

- Mr. Pingky Dezar Zulkarnain
- Mr. Burhan Yasin Seid
- Mr. Suezaki Hiroki

# **APPENDIX 1**

## **Definition of Indicators and Sub-Indicators**

### **1. Network Preparedness/Infrastructure**

Network preparedness is the basic infrastructural foundation for an effective e-Government implementation. Infrastructure for network has long been available in many countries and become an important tool to connect the citizens and enterprises to governments. It is made of four sub-indicators as follows:

#### **1.1 Internet Users**

The Internet Users Sub-Indicator shows the number of those who use Internet from any location by any devices. The number depicts not only the internet subscriber but also those who access the Internet via internet café or kiosk and other public places. This parameter basically covers all means of connection types. The figure will acknowledge the ITU Databank on “Internet Users” survey result.

#### **1.2 Broadband Subscribers**

The Broadband Subscribers Sub-Indicator shows the number of those who subscribe broadband or high-speed internet service from Internet Service Provider. Broadband service is one of important factors in accessing e-Government services. The use of broadband connections can help governments in improving the efficiency of conduct the new services such as m-Government. Since there is no internationally agreed definition of Broadband in capacity and term of speeds, the number will take the survey result from ITU into account.

#### **1.3 Mobile Subscribers**

The Mobile Subscribers Sub-Indicator shows the number of those who subscribe mobile service for any means of communication such as voice and data. We will use the databank from ITU research on Mobile Cellular Users.

#### **1.4 PC Users**

The PC Users Sub-Indicator shows the number of those who use PC in a respected location such as school, office, or public place. This Sub-Indicator will use the ITU Databank related to “PC User” survey result.

## **2. Management Optimization**

The “Management Optimization” indicator reflects the utilization of ICT for improving government business processes. The optimization should show the effort to integrate the silo of business processes using ICT. Clear direction from the top is required to implement such improvement and integration effectively and successfully. The roadmaps of improvement process are well defined and acknowledged by all stakeholders. This indicator refers to the e-Government strategies at national and sub-national level, which encompassed the entire national government and well-defined targets.

### **2.1 Optimization Awareness**

The Optimization Awareness Sub-Indicator will use the following items as the supporting evidence.

- The presence of National strategy: A nation-wide policy covers the interactions among government institutions. There is only one government institution that has a mandate to release the strategy.
- Scope of National Strategy: A national e-Government strategy can be composed a specific sector such as a national medical records strategy. And it can also be a general strategy, for instance, a strategy to secure electronic communications in all national government agencies.
- Timeliness or Time Relevance: The Strategy must be “current” in the sense that it is ongoing, that is within the time period within which the country is being surveyed. To measure the timelines, the sub-indicator requires the roadmap of the national strategy. In other word, the national strategy should contain the roadmap of implementation.
- Role Definitions: A current national e-Government strategy should clearly state the role of participating agencies. As a reference, the role might be categorized into four type of roles; Responsible, Accountable, Consulted, and Informed. Some country may use the different terminology although the substance is the same. The Project Management Practices are applied.

### **2.2 Enterprise Architecture**

- The national government has a centralized network (The centralized network here refers to a physically wired and/or wireless network. It can also refer to a virtual network over the Internet. Government agencies may or may not connect to this network. Such a network may or may not be open for external use).
- There is a national metadata standard in place (It is sufficient to find evidence of a metadata standard in one area/sector, such as Medical Health Records or Land Management in order to mark this parameter with YES).

### **2.3 Administrative and Budgetary Systems**

For this parameter, a centralized or shared administrative system can be all, some, or one of the following: an electronic financial management information system (FMIS), a budgetary system, a human resource management system, a document management system, a workflow system, a groupware system, or an enterprise resource planning (ERP) system.

### **3. Online Services/e-services**

E-service is the integration of business processes, policies, procedures, tools, technologies, and human efforts to facilitate both assisted and unassisted customer services in using the Internet and other networks. Government provides services at different levels: for various governments (government-to-government), for private enterprise initiators (government-to-business) and for citizenry access (government-to-citizens). Government-to-citizens service involves all the communication or transactions between government, at various levels, and citizens. Now governments are developing the next stage of e-government by establishing the e-service infrastructure and organizational capacity for constituents to transact official business online.

#### **3.1 e-Procurement**

E-Procurement is the business-to-business or business-to-consumer or business-to-government purchase and sale of supplies, work, and services through the Internet as well as other information and networking systems, such as electronic data interchange and enterprise resource planning.

In public sector, e-procurement can provide a government with some benefits such as increased transparency, efficiency, cost savings and eliminate physical interaction between procurement committee and supplier, hence reduce corruption in a procurement process.

#### **3.2 e-Tax system**

E-Tax is intended to radically improve tax administration efficiency in both back office tax record management and front-line tax consultation and to significantly reduce the public's tax compliance costs: the dual benefits for both internal (tax consultants) and external stakeholders (taxpayers).

#### **3.3 e-Custom System**

E-Customs is the use of Information Technology to carry out customs compliance using electronic communications channels replacing paper format customs procedures, thus creating a more efficient and modern customs environment.

#### **3.4 e-Health system**

E-health is the transfer of health resources and health care by electronic means. It encompasses three main areas:

- The delivery of health information, for health professionals and health consumers, through the Internet and telecommunications.
- Using the power of ICT and e-commerce to improve public health services, e.g. through the education and training of health workers.
- The use of e-commerce and e-business practices in health systems management.

The World Health Organization defines eHealth as: e-Health is the cost-effective and secure use of information and communications technologies in support of health and health-related field, including health care services, health surveillance, health literature, and health education, knowledge and research.

The European Commission defines e-Health very generally as: the use of modern information and communication technologies to meet needs of citizens, patients, healthcare professionals, healthcare providers, as well as policy makers.

### **3.5 One-stop Service**

A one-stop service is a service aggregator in which citizen visit only one place to obtain any kind of government services from the visited place. The term originated in the United States in the early 1930s to describe a business model offering customers the convenience of having multiple needs met in one location, instead of having to "drive all over town" to attain related services at different stores. The phrase is now used as slang to describe everything from Web sites to TV shows where people can find most of what they need, including information, in one place.

## **4. National Portal**

The national portal is the foundation of e-government and a basic interface for stakeholders to access government in an electronic way. In our survey, we select four factors affecting the portal significantly; they are "Navigation, Interactivity, Interface, and Technical". National portal is the face of the Government to communicate with citizens through the provision of e-services, guidance information as well as other utilities,

## **5. Government CIO**

The Government CIO is the expert who has mandate to align management strategy with ICT investment in order to achieve a balance between the business strategy, organizational reform, and management reform; hence, the Government CIO is one of the key factors in the success of e-Government implementation.

The presence of Chief information officers (CIOs) in government play important role in the success of e-government. The name of GCIO might be differing among

countries. The same position with the same capacity can be named differently. However, the title CIO is becoming very important since there are growing international collaboration to support CIO human resource development. In this area, the evaluated indicators were: the introduction of CIOs, Human Resource Development for CIOs, Supporting Body for CIO and Role and Function of CIOs.

### **5.1 Presence of GCIO**

Presence of Government CIO means that: whether or not the CIO is appointed at National Level, in national government agency center.

### **5.2 GCIO Mandate**

GCIO can work effectively if there is more regulation that states the rights, mandate and responsibility of GCIO. Therefore, such regulation should exist in national level.

### **5.3 CIO Organizations**

A Federal CIO Council officially or CIO association or Forum in the country and also whether Government CIO office is established at the national.

### **5.4 CIO Development Programs**

As for capacity building, the CIO training course, CIO academy and related organization refer to International standard based upon CIO core competences.

## **6. E-government Promotion**

The “E-Government Promotion” indicator is evaluated by using a comprehensive list of parameters, which judges the degree of development in each section and the current status of each government’s e-government promotion development. In our e-government ranking survey, it includes the activities involved in supporting the implementation of e-government such as legal frameworks and mechanisms (laws, legislations, plans, policies and strategies). In other words, the government carries out these activities in order to support the development of e-Services as well as e-government as a whole.

It looked into strategies involved in prioritizing e-government as part of a country’s national strategy; activities pertaining to the promotion of e-government; passage of bills or amendments of laws providing legal mandates and, the country’s assessment efforts. Results of this research showed that the majority of the countries include e-Government at the core of their national strategy. However, some have not yet to create a legal framework for e-government.

### **6.1 Legal Framework**

This framework related to the existing laws and legislations, plan/strategy and policies at the national and sub-national level are concerned.

## **6.2 Enabling Mechanism**

In our research, we determine all the government entities, private entities and the collaborations between public and private involved at national level as well as sub-national level such as at bureau, council, department, ministry, organization.

## **6.3 Support Mechanism**

Related to the Waseda e-government ranking survey, in this sub-indicator we have to find out the government activities on promoting e-government such as: Do they have any training course on e-government for citizens? Or existence of any conference, fora and seminars at national and sub-national level, or are there any activities of promotion for e-public services?

## **6.4 Assessment Method**

Assessment methodology is the procedure to oversight the development and implementation of e-government. All information and data from any government agencies, from the private sector, and from academia are very important to evaluate the progress of e-government.

## **7. E-Participation**

E-Participation is a term referring to ICT-supported participation in government and governance processes. Processes may be concerned administration, service delivery, decision-making and policy-making.

Triggered by the advent of web 2.0 technologies, it is come to the era of government 2.0 powered by more convergence of e-government applications to public. This phenomenon shows the trend of internet application to be more citizen-centric, including e-government which introduces the e-Participation.

An e-Participation indicator is used to take into account the “demand” side of e-government as well as to see to what degree the people are using e-government platforms especially in the light of Gov 2.0.

### **7.1 E-Information**

Information by ICT means in which government produces and delivers information for use by citizens.

### **7.2 Interactive**

A two-way relationship in which citizens provide feedback to government. It is based on the prior definition of e-information. Governments define the issues for consultation, set the questions and manage the process, while citizens are invited to contribute their views and opinions.

### **7.3 E-Decision Making Process**

A process in which the citizens can participate in the government decision making process using ICT, e.g., e-voting system and online polls. In addition, this sub-indicator includes the process of how government informs its citizens about the decision they have made, e.g., publication of online polls/e-survey results and government action.

## **8. Open Government Data**

Open data is government data that can be freely used, reused and redistributed by anyone - subject only, at most, to the requirement to attribute and share alike. Open data does not mean that a government or other entity releases all of its data to the public. It would be unconscionable for the government to give out all of citizens, personal data to anyone who asks for it. Rather, open data means that whatever data is released is done so in a specific way to allow the public to access it without having to pay fees or be unfairly restricted in its use. In addition, open data requires the government to provide electronic data that has interoperability to others.

- **Availability and Access:** the data must be available in the form of completeness at no more than a reasonable reproduction cost, preferably by downloading over the internet. The data must also be available in an open standard.
- **Reuse and Redistribution:** the data should be available under terms that permit reuse and redistribution including the intermixing with other datasets.
- **Universal Participation:** everyone must be able to use, reuse and redistribute - there should be no discrimination against fields of endeavor or against persons or groups. For example, ‘non-commercial’ restrictions that would prevent ‘commercial’ use, or restrictions of use for certain purposes (e.g. only in education), are not allowed.

The evidence to proof the presence of the Open Data is to review whether the e-government application provides RSS Feed, Web API Service, or something substantially similar to them. The total score of this indicator is the calculation of the following sub-indicators.

### **8.1 Legal Framework**

The legal framework sub-indicator shows the presence of law or regulation that constitutes the standardization of the Open Government. It explains the data that is either shareable or private.

### **8.2 Society**

This sub-indicator explains the variety of access channel provided by governments for public to access their shareable data. The channel might be the porting to popular social media applications such as Facebook, Twitter, and YouTube.

### **8.3 Organization**

Organizations in this survey refer to the presence of organization that responsible to maintain the open data, usually the metadata, to make sure that the data is interoperable and comply with agreed standard for Open Data initiatives.

## **9. Cyber Security**

Cyber security is the collection of tools, policies, security concepts, security safeguards, guidelines, risk management approaches, actions, training, best practices, assurance and technologies that can be used to protect the cyber environment and organization and user's assets. Both organization and user's assets include connected computing devices, personnel, infrastructure, applications, services, telecommunications systems, and the totality of transmitted and/or stored information in the cyber environment. Cyber security strives to ensure the attainment and maintenance of the security properties of the organization and user's assets against relevant security risks in the cyber environment. The score of this indicator is based on the combination of the following sub-indicators.

### **9.1 Cyber Law**

Refers to any legal frameworks that protect rights of internet users and provide the internet users with a law certainty. The Cyber law should state that there is a punishment for any misuse of the internet and Cyber Crime activities such as distributing viruses, piracy, harming privacy, carding, cracking, and hacking. The existence of such regulation or law will apply as the measurement.

### **9.2 Cyber Crime**

Cybercrime is criminal activity done using computers and the Internet. This includes anything from downloading illegal government files to stealing millions of dollars from online bank accounts. Cybercrime also includes non-monetary offenses, such as creating and distributing viruses on other computers or posting confidential business information on the Internet. The score of this sub-indicator require a review of procedure, tools, and applications to tackle the Cyber Crime Incident.

### **9.3 Internet Security Organization**

This sub-indicator reflects the presence of the organization unit that is responsible for enhancing the cyber security readiness and response of both public and private sectors entities with a commitment of collaboration. The organization should have a right to monitor internet traffic in all over the country. The presence of such organization is the value for this sub-indicator.

## APPENDIX 2

### Top 10 ICT and E-government ranking by other Organizations

#### 1. 2014 IMD World Competitive Ranking

No	Country	No	Country
1	USA	6	Germany
2	Switzerland	7	Canada
3	Singapore	8	UAE
4	Hong Kong	9	Denmark
5	Sweden	10	Norway

(UK 16<sup>th</sup>, Japan 21<sup>st</sup>, Korea 26<sup>th</sup>)

#### 2. Accenture 2014 E-Government Ranking (Only 10 countries)

No	Country	No	Country
1	Singapore	6	USA
2	Norway	7	UK
3	UAE	8	India
4	Korea	9	Germany
5	Saudi Arabia	10	Brazil

#### 3. WEF 2013-2014 The Global Competitive Index Ranking

No	Country	No	Country
1	Switzerland	6	Sweden
2	Singapore	7	Hong Kong
3	Finland	8	Netherlands
4	Germany	9	Japan
5	USA	10	UK

(Korea 25<sup>th</sup>)

#### 4. UN E-Government Survey 2012

No	Country	No	Country
1	Korea	6	France
2	Netherlands	7	Sweden
3	UK	8	Norway
4	Denmark	9	Finland
5	USA	10	Singapore

## 5. ITU 2013 ICT Development Index

No	Country	No	Country
1	Korea	6	Norway
2	Sweden	7	Netherland
3	Iceland	8	UK
4	Denmark	9	Luxembourg
5	Finland	10	Hong Kong

## APPENDIX 3

### E-Government National Portal and Open Government Data Portal

Countries Name	Government Portal Site	Open Government Data					
		Portal Site	Dataset	Data Type	Data Request	App	Develop
Argentina	argentina.gob.ar	datospublicos.gob.ar	O	O		O	
Australia	australia.gov.au	data.gov.au	O	O	O		
Austria	digitales.oesterreich.gv.at	data.gv.at	O	O	O	O	O
Belgium	belgium.be	data.belgium.be	O	O	O	O	O
Brazil	brazil.gov.br	dados.gov.br	O				
Brunei	gov.bn	N/A					
Cambodia	mfaic.gov.kh	N/A					
Canada	canada.gc.ca	data.gc.ca	O	O	O	O	O
Chile	gob.cl	datos.gob.cl	O	O	O	O	
China	gov.cn	data.stats.gov.cn	O				
Colombia	gobiernoenlinea.gov.co	datos.gov.co	O	O		O	O
Czech Republic	portal.gov.cz	opendata.cz	O	O	O	O	
Denmark	denmark.dk	data.digitaliser.dk	O	O			
Egypt	egypt.gov.eg	N/A					
Estonia	eesti.ee	pub.stat.ee	O				
Fiji	fiji.gov.fj	N/A					
Finland	suomi.fi	N/A					
France	service-public.fr	data.gouv.fr	O	O			
Georgia	government.gov.ge	N/A					
Germany	bund.de	govdata.de	O	O		O	
HK SAR	gov.hk	N/A					
India	india.gov.in	data.gov.in	O	O		O	O
Indonesia	indonesia.go.id	opengovindonesia.org	O				
Iran	president.ir	NA					
Israel	gov.il	data.gov.il	O	O			
Italy	italia.gov.it	dati.gov.it	O	O	O	O	
Japan	e-gov.go.jp	data.go.jp	O	O	O	O	O
Kazakhstan	egov.kz	N/A					
Kenya	e-government.go.ke	opendata.go.ke	O	O	O	O	
Korea	korea.go.kr	data.go.kr	O	O	O	O	O
Macau	gov.mo	N/A					
Malaysia	malaysia.gov.my	N/A					
Mexico	gob.mx	N/A					
Netherlands	government.nl	data.overheid.nl	O	O	O	O	O

New Zealand	newzealand.govt.nz	data.govt.nz	O	O	O		O
Nigeria	nigeria.gov.ng	N/A					
Norway	regjeringen.no	data.norge.no	O	O	O	O	
Pakistan	pakistan.gov.pk	N/A					
Peru	peru.gob.pe	datosperu.org	O				
Philippines	gov.ph	data.gov.ph	O	O		O	O
Poland	en.poland.gov.pl	N/A					
Portugal	portaldocidadao.pt	dados.gov.pt	O	O	O	O	O
Romania	e-guvernare.ro	N/A					
Russia	government.ru	N/A					
Saudi Arabia	saudi.gov.sa	saudi.gov.sa	O	O			
Singapore	gov.sg	data.gov.sg	O			O	O
South Africa	gov.za	N/A					
Spain	060.es	datos.gob.es	O	O	O	O	
Sweden	sweden.gov.se	xn-ppnadata-m4a.se	O	O			
Switzerland	ch.ch	opendata.admin.ch	O	O	O	O	
Taiwan	taiwan.gov.tw	data.gov.tw	O	O		O	
Thailand	egov.go.th	N/A					
Tunisia	tunisie.gov.tn	data.gov.tn	O	O	O		
Turkey	turkiye.gov.tr	N/A					
UAE	government.ae	government.ae/en/web/guest/uae-data	O	O		O	
UK	gov.uk	data.gov.uk	O	O	O	O	O
Uruguay	portal.gub.uy	datos.gub.uy	O				
USA	usa.gov	data.gov	O	O	O	O	O
Uzbekistan	gov.uz	N/A					
Venezuela	gobiernoonlinea.gob.ve	N/A					
Vietnam	chinhphu.vn	N/A					

*Source: Waseda Institute of e-Government*

Note:

The table shows the government portal site address of our survey, and there is portal site of open government data for each. "Dataset" the portal provides search engine and the dataset categorizations of open government data. "Data Type" shows the portal provides many data type of downloadable well-known file format. "Data Request" shows the portal provides forum to drive citizen to request new type or format type of open government data. "App" shows the portal has application show case and some application list that uses open government data. "Develop" shows the portal provides API and community forum to citizens, researchers and developer to develop application using open government data.

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