Digital Governance in Municipalities Worldwide (2005)

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A Longitudinal Assessment of Municipal Websites Throughout the World

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Division for Public Administration and Development Management
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EXECUTIVE SUMMARY

This research replicates a survey completed in 2003. The present survey evaluates the practice of digital governance in large municipalities worldwide in 2005. Both studies focused on the evaluation of current practices in government, and the emphasis of the research was on the evaluation of each website in terms of digital governance. Simply stated, digital governance includes both digital government (delivery of public service) and digital democracy (citizen participation in governance). Specifically, we analyzed security, usability, and content of websites, the type of online services currently being offered, and citizen response and participation through websites established by city governments.

The methodology of the 2005 survey of municipal websites throughout the world mirrors that of the initial research done in 2003. There were some improvements from the first study. In order to keep a degree of consistency for a longitudinal assessment, the 2005 survey was theoretically similar, but a few changes were made in the cities selected, and the Rutgers-SKKU E-Governance Performance Index was updated. The survey instrument was expanded from 92 scaled measures to 98. This research focused on cities throughout the world based on their population size, the total number of individuals using the Internet and the percentage of individuals using the Internet. In the 2003 survey, data from the International Telecommunication Union (ITU), an organization affiliated with the United Nations (UN), was used to determine the 100 municipalities. Of 196 countries for which telecommunications data was reported, those with a total online population over 100,000 were identified. As a result, the most populated cities in 98 countries were selected to be

surveyed (along with Hong Kong and Macao). For the 2005 worldwide survey the most recent available ITU-UN data was used. These updated figures produced slightly different results. Countries with an online population over 100,000 increased to 119. Therefore, we set a new cut-off mark at countries with an online population over 160,000. This resulted in 98 countries which met the new mark. With the inclusion of Hong Kong and Macao, as in 2003, a total of 100 cities were identified for the 2005 survey.

In 2003, the largest city in each of the selected countries was used as a surrogate for all cities in a particular country. There were a few changes in the 98 countries identified using the measures discussed above. Six countries that were identified in 2003 do not have online populations of over 160,000. These countries and their most populated cities are: Manama, Bahrain; Port Louis, Mauritius; Port-of-Spain, Trinidad & Tobago; Asuncion, Paraguay; Sarajevo, Bosnia; and Havana, Cuba. Of these six cities, only five were surveyed, with Havana having an unidentified official government website. As none of the five surveyed cities listed above were ranked in the top 25th percentile of rankings, their exclusion from the 2005 worldwide survey was not found to be significant enough to retain. The six new cities are: Abidjan, Cote d'Ivoire; Accra, Ghana; Chisinau, Moldova; Omdurman, Sudan; Halab, Syria; and Tripoli, Libya.

Both studies evaluated the official websites of each city in their native languages. The initial study evaluated websites between June and October of 2003, while this most recent research evaluated websites between August and November of 2005[1]. For the 2005 data, 81 of the 100 cities were included in the overall rankings, excluding the 19 municipalities where no official website was obtainable. Our instrument for evaluating city and municipal websites consisted of five components: 1. Security and Privacy; 2. Usability; 3. Content; 4. Services; and 5. Citizen Participation. For each of those five components, our research applied 18-20 measures, and each

[1] Although the majority of municipal websites were evaluated during the stated time period, a few websites were evaluated or revaluated as late as January 2006 for this most recent study.

measure was coded on a scale of four-points (0, 1, 2, 3) or a dichotomy of two-points (0, 3 or 0, 1). Our research instrument goes well beyond previous research, with the initial study utilizing 92 measures, of which 45 were dichotomous, as above. This most recent study has further developed the research instrument to include 98 measures, of which 43 were dichotomous. The most significant change was in the Citizen Participation component, where six new research questions were added.[2]

Furthermore, in developing an overall score for each municipality we have equally weighted each of the five categories so as not to skew the research in favor of a particular category (regardless of the number of questions in each category). This reflects the same methods utilized in the 2003 study. To ensure reliability, each municipal website was assessed in the native language by two evaluators, and in cases where significant variation (+ or – 10%) existed on the adjusted score between evaluators, websites were analyzed a third time. Furthermore, an example for each measure indicated how to score the variable. Evaluators were given comprehensive written instructions for assessing the websites.

Based on the 2005 evaluation of 81 cities, Seoul, New York, Shanghai, Hong Kong, and Sydney represent the cities with the highest evaluation scores. There were only slight changes in the top five cities when compared to the 2003 study. Seoul remained the highest ranked city, but the gap between first and second was slightly closed. In some cases, the scores may have slightly declined from the previous study. This may be attributed in part to the added measures for the 2005 research instrument. Table 1 lists the top 20 municipalities in digital governance based on the 2005 data, with Table 2 listing the 20 municipalities from the 2003 study.

[2] One question was removed from the Security and Privacy component and one added to the Content component.

[Table 1] Top 20 Cities in Digital Governance (2005)

Ranking	City	Score	Privacy	Usability	Content	Service	Participation
1	Seoul	**81.70**	17.60	17.81	16.04	16.61	13.64
2	New York	**72.71**	16.00	19.06	14.79	15.76	7.09
3	Shanghai	**63.93**	12.00	18.75	13.13	11.69	8.36
4	Hong Kong	**61.51**	15.60	16.25	13.75	13.73	2.18
5	Sydney	**60.82**	16.80	17.81	12.50	8.98	4.73
6	Singapore	**60.22**	10.40	15.94	11.67	14.58	7.64
7	Tokyo	**59.24**	12.00	16.25	12.29	10.34	8.36
8	Zurich	**55.99**	16.40	14.69	13.96	9.49	1.45
9	Toronto	**55.10**	11.20	14.06	11.46	9.83	8.55
10	Riga	**53.95**	6.80	17.50	13.75	6.44	9.45
11	Warsaw	**53.26**	0.00	15.31	13.54	11.86	12.55
12	Reykjavik	**52.24**	11.60	13.13	13.54	10.34	3.64
13	Sofia	**49.11**	8.00	13.44	11.67	7.46	8.55
14	Prague	**47.27**	0.00	16.88	10.21	10.00	10.18
15	Luxembourg	**46.58**	7.20	15.31	11.88	7.29	4.91
16	Amsterdam	**46.44**	10.40	12.50	9.79	5.93	7.82
17	Paris	**45.49**	8.80	15.94	11.46	4.75	4.55
18	Macao	**45.48**	10.40	13.44	13.13	5.42	3.09
19	Dublin	**44.10**	8.00	16.88	11.04	4.92	3.27
20	Bratislava	**43.65**	0.00	15.94	11.04	5.76	10.91

[Table 2] Top 20 Cities in Digital Governance (2003)

Ranking	City	Score	Privacy	Usability	Content	Service	Participation
1	Seoul	**73.48**	11.07	17.50	13.83	15.44	15.64
2	Hong Kong	**66.57**	15.36	19.38	13.19	14.04	4.62
3	Singapore	**62.97**	11.79	14.06	14.04	13.33	9.74
4	New York	**61.35**	11.07	15.63	14.68	12.28	7.69
5	Shanghai	**58.00**	9.64	17.19	11.28	12.46	7.44
6	Rome	**54.72**	6.79	14.69	9.57	13.16	10.51
7	Auckland	**54.61**	7.86	16.88	11.06	10.35	8.46
8	Jerusalem	**50.34**	5.71	18.75	10.85	5.79	9.23
9	Tokyo	**46.52**	10.00	15.00	10.00	6.14	5.38
10	Toronto	**46.35**	8.57	16.56	9.79	5.79	5.64
11	Helsinki	**45.09**	8.57	15.94	11.70	6.32	2.56
12	Macao	**44.18**	4.29	17.19	11.91	7.72	3.08
13	Stockholm	**44.07**	0.00	13.75	14.68	10.00	5.64
14	Tallinn	**43.10**	3.57	13.13	12.55	6.67	7.18
15	Copenhagen	**41.34**	4.643	13.438	9.787	5.789	7.692
16	Paris	**41.33**	6.429	14.375	7.660	5.439	7.436
17	Dublin	**38.85**	2.50	13.44	11.28	7.02	4.62
18	Dubai	**37.48**	7.86	10.94	7.87	8.25	2.56
19	Sydney	**37.41**	6.79	12.19	9.15	5.44	3.85
20	Jakarta	**37.28**	0.00	16.56	9.79	6.32	4.62

[Table 3] Top 10 Cities in Privacy and Security (2005)

Rank	City	Country	Score
1	Seoul	Republic of Korea	**17.60**
1	Sydney	Australia	**16.80**
3	Zurich	Switzerland	**16.40**
4	New York	United States	**16.00**
5	Hong Kong	Hong Kong	**15.60**
6	Rome	Italy	**13.20**
7	Berlin	Germany	**12.80**
8	Shanghai	China	**12.00**
8	Tokyo	Japan	**12.00**
10	Reykjavik	Iceland	**11.60**

[Table 4] Top 10 Cities in Usability (2005)

Rank	City	Country	Score
1	New York	United States	**19.06**
2	Shanghai	China	**18.75**
3	Seoul	Republic of Korea	**17.81**
3	Sydney	Australia	**17.81**
5	Riga	Latvia	**17.50**
6	Oslo	Norway	**17.19**
7	Dublin	Ireland	**16.88**
7	Prague	Czech Rep.	**16.88**
7	Jerusalem	Israel	**16.88**
10	Hong Kong	Hong Kong	**16.25**

[Table 5] Top 10 Cities in Content (2005)

Rank	City	Country	Score
1	Seoul	Republic of Korea	**16.04**
2	New York	United States	**14.79**
2	Tallinn	Estonia	**14.79**
4	Zurich	Switzerland	**13.96**
5	Riga	Latvia	**13.75**
5	Hong Kong	Hong Kong	**13.75**
7	Warsaw	Poland	**13.54**
7	Reykjavik	Iceland	**13.54**
9	Shanghai	China	**13.13**
9	Macao	Macao	**13.13**

[Table 6] Top 10 Cities in Service Delivery (2005)

Rank	City	Country	Score
1	Seoul	Republic of Korea	**16.61**
2	New York	United States	**15.76**
3	Singapore	Singapore	**14.58**
4	Hong Kong	Hong Kong	**13.73**
5	Warsaw	Poland	**11.86**
6	Shanghai	China	**11.69**
7	Tokyo	Japan	**10.34**
7	Reykjavik	Iceland	**10.34**
9	Prague	Czech Rep.	**10.00**
10	Toronto	Canada	**9.83**

[Table 7] Top 10 Cities in Citizen Participation (2005)

Rank	City	Country	Score
1	Seoul	Republic of Korea	**13.64**
2	Warsaw	Poland	**12.55**
3	Bratislava	Slovak Republic	**10.91**
4	London	United Kingdom	**10.55**
5	Prague	Czech Rep.	**10.18**
6	Riga	Latvia	**9.45**
7	Toronto	Canada	**8.55**
7	Sofia	Bulgaria	**8.55**
9	Shanghai	China	**8.36**
9	Tokyo	Japan	**8.36**

This research represents a continued effort to evaluate digital governance in large municipalities throughout the world. Even though some researchers have evaluated government websites, they have focused primarily on e-governance at the federal, state, and local levels in the United States. Only a few studies have produced comparative analyses of e-governance in national governments throughout the world.

Based on the 2005 research, there appears to be a continued divide in terms of digital governance throughout the world. For example, although the average score for digital governance in municipalities throughout the world is 33.11 (an increase from 28.49 in 2003), the average score in OECD countries is higher, 44.35, while the average score in non-OECD countries is lower, only 26.50. Although the average scores for both OECD and non-OECD countries have increased, the gap between the two scores has widened (12.08 in 2003 to 17.85 in 2005). In addition, whereas 25 of 30 cities in OECD countries are above the world average, only 11 of 51 cities in non-OECD countries are above that average.

In addition, 71% of cities selected in Africa, 22% in Asia, and 20% in North America have not established official city websites. Every city selected in Europe and South America had its own official website. These findings reflect those of the 2003 study, in that cities in Africa have not paid attention to developing their capabilities in digital governance; most cities in other continents are

interested in developing those capabilities.

As we concluded in 2003, since there is a gap between developed and under-developed countries, it is very important for international organizations such as the UN and cities in advanced countries to attempt to bridge the digital divide. We recommend developing a comprehensive policy for bridging the divide. That comprehensive policy should include capacity building for municipalities, including information infrastructure, content, and applications and access for individuals.

1

INTRODUCTION

This research replicates a survey completed in 2003. The present survey evaluates the practice of digital governance in large municipalities worldwide in 2005. Both studies focused on the evaluation of current practices in government, and the emphasis in the research was on the evaluation of each website in terms of digital governance. Simply stated, digital governance includes both digital government (delivery of public service) and digital democracy (citizen participation in governance). Specifically, we analyzed security, usability, and content of websites, the type of online services currently being offered, and citizen response and participation through websites established by city governments.

The following chapters represent the overall findings of the research. Chapter 2 outlines the methodology utilized in determining the websites evaluated, as well as the instrument used in the evaluations. The methodological steps taken by the 2005 surveys of municipal websites mirror those of the initial research done in 2003. Our survey instrument uses 98 measures and we use a rigorous approach for conducting the evaluations. Chapter 3 presents the overall findings for the 2005 evaluation. In particular, Seoul, New York City and Shanghai are the three top ranked cities based on the 2005 evaluation. The overall results of the evaluation are also broken down into results by continents, and by OECD and non-OECD member countries.

Chapters 4 through 8 take a closer look at the results for each of the five e-governance categories. Chapter 4 focuses on the results of privacy and security with regard to municipal websites. Chapter 5 looks at the usability of municipalities throughout the world.

Chapter 6 presents the findings for Content, while Chapter 7 looks at Services. Chapter 8 concludes the focus of specific e-governance categories by presenting the findings of citizen participation online.

The concluding chapters take a closer look at the best practices, and at comparisons to the results from the 2003 evaluation. Chapter 9 highlights the three highest ranked cities in the 2005 evaluation: Seoul, New York City and Shanghai. Chapter 10 provides a longitudinal assessment of the 2003 and 2005 evaluations, with comparisons among continents, e-governance categories and OECD and non-OECD member countries. This report concludes with Chapter 11, providing recommendations and discussion of significant findings.

2

METHODOLOGY

The methodological steps taken by the 2005 surveys of municipal websites throughout the world mirror those of the initial research done in 2003. There are minimal changes, but in order to keep a degree of consistency for a longitudinal assessment, the 2005 survey was theoretically similar; only a few changes were made in the cities selected, and an updated survey instrument was expanded from 92 measures to 98. The following review of our methodology borrows from our *Digital Governance* (2004) report based on the 2003 data, and includes two new sections: New Measures and Survey Instrument Comparison.

This research examines cities throughout the world based on their population size, the total number of individuals using the Internet and the percentage of individuals using the Internet. In the 2003 survey, data from the International Telecommunication Union (ITU), an organization affiliated with the United Nations (UN), was used to determine the 100 municipalities. Of 196 countries for which telecommunications data was reported, those with a total online population over 100,000 were identified. As a result, the most populated cities in 98 countries were selected to be surveyed (along with Hong Kong and Macao). For the 2005 worldwide survey the most recent available ITU-UN data was used. These updated figures produced slightly different results. Countries with an online population over 100,000 increased to 119. Therefore, we set a new cut-off mark at countries with an online population over 160,000. This resulted in 98 countries which met the new mark. With the inclusion of Hong Kong and Macao, as in 2003, a total of 100 cities were identified for the 2005 survey. Hong Kong and Macao were

added to the 98 cities selected, since they have been considered as independent countries for many years and have high percentages of Internet users.

The rationale for selecting the largest municipalities stems from the e-governance literature, which suggests a positive relationship between population and e-governance capacity at the local level (Moon, 2002; Moon and deLeon, 2001; Musso, et. al., 2000; Weare, et. al. 1999). In 2003, the most populated city in each county was identified using various data sources. In cases where the city population data that was obtained utilized a source dated before 2000, a new search was done for the most recent population figures. All city population data was updated to reference 2000-2005 figures. The new population data did not result in any changes from the cities selected in 2003 and those selected in the 2005 study. However, there were a few changes in the 98 countries identified using the measures discussed above.

Six countries that were identified in 2003 do not have online populations of over 160,000. These countries and their most populated cities are: Manama, Bahrain; Port Louis, Mauritius; Port-of-Spain, Trinidad & Tobago; Asuncion, Paraguay; Sarajevo, Bosnia; and Havana, Cuba. Of these six cities, only five were surveyed, with Havana having an unidentified official government website. As none of the five surveyed cities listed above was ranked in the top 25th percentile of rankings, their exclusion from the 2005 worldwide survey was not found to be significant enough to retain. The six new cities are: Abidjan, Cote d'Ivoire; Accra, Ghana; Chisinau, Moldova; Omdurman, Sudan; Halab, Syria; and Libya, Tripoli. In 2003, 80 of the 100 cities identified were surveyed (by two surveyors) and were included in the overall rankings. For the 2005 data, 81 of the 100 cities were included in the overall rankings, excluding municipalities where no official website was obtainable. Table 2-1 is a list of the 100 cities selected.

[Table 2-1] 100 Cities Selected by Continent (2005)

Africa (14)	
Abidjan (Cote d'Ivoire)*	Dar-es-Salaam (Tanzania)*
Accra (Ghana)*	Harare (Zimbabwe)*
Algiers (Algeria)*	Lagos (Nigeria)
Cairo (Egypt)	Lome (Togo)*
Cape Town (South Africa)	Nairobi (Kenya)
Casablanca (Morocco)*	Omdurman (Sudan)*
Dakar (Senegal)*	Tunis (Tunisia)*
Asia (31)	
Almaty (Kazakhstan)*	Kuala Lumpur (Malaysia)
Amman (Jordan)	Kuwait City (Kuwait)*
Baku (Azerbaijan)*	Macao SAR (Macao SAR)
Bangkok (Thailand)	Mumbai (India)
Beirut (Lebanon)	Muscat (Oman)*
Bishkek (Kyrgyzstan)*	Nicosia (Cyprus)
Colombo (Sri Lanka)	Quezon City (Philippines)
Dhaka (Bangladesh)	Riyadh (Saudi Arabia)
Dubai (United Arab Emirates)	Seoul (Republic of Korea)
Halab (Syria)*	Shanghai (China)
Ho Chi Minh (Vietnam)	Singapore (Singapore)
Hong Kong SAR (Hong Kong SAR)	Tashkent (Uzbekistan)
Istanbul (Turkey)	Tehran (Iran)
Jakarta (Indonesia)	Tripoli (Libya)*
Jerusalem (Israel)	Tokyo (Japan)
Karachi (Pakistan)	
Europe (34)	
Amsterdam (Netherlands)	Madrid (Spain)
Athens (Greece)	Minsk (Belarus)
Belgrade (Serbia and Montenegro)	Moscow (Russian Federation)
Berlin (Germany)	Oslo (Norway)
Bratislava (Slovak Republic)	Paris (France)
Brussels (Belgium)	Prague (Czech Republic)
Bucharest (Romania)	Reykjavik (Iceland)
Budapest (Hungary)	Riga (Latvia)
Chisinau (Moldova)	Rome (Italy)
Copenhagen (Denmark)	Sofia (Bulgaria)
Dublin (Ireland)	Stockholm (Sweden)
Helsinki (Finland)	Tallinn (Estonia)
Kiev (Ukraine)	Vienna (Austria)
Lisbon (Portugal)	Vilnius (Lithuania)
Ljubljana (Slovenia)	Warsaw (Poland)
London (United Kingdom)	Zagreb (Croatia)
Luxembourg City (Luxembourg)	Zurich (Switzerland)

[Table 2-1] 100 Cities Selected by Continent (CONT., 2005)

North America (10)	
Mexico City (Mexico) Guatemala City (Guatemala) Kingston (Jamaica)* New York (United States) Panama City (Panama)	San Jose (Costa Rica) San Salvador (El Salvador) Santo Domingo (Dominican Republic)* Tegucigalpa (Honduras) Toronto (Canada)
South America (9)	
Buenos Aires (Argentina) Caracas (Venezuela) Guayaquil (Ecuador) La Paz (Bolivia) Lima (Peru)	Montevideo (Uruguay) Santa Fe De Bogota (Colombia) Santiago (Chile) Sao Paulo (Brazil)
Oceania (2)	
Auckland (New Zealand)	Sydney (Australia)

* Official city websites unavailable

WEBSITE SURVEY

In this research, the main city homepage is defined as the official website where information about city administration and online services are provided by the city. The city website includes websites about the city council, mayor and executive branch of the city. If there are separate homepages for agencies, departments, or the city council, evaluators examined whether these sites were linked to the menu on the main city homepage. If the website was not linked, it was excluded from evaluation.

Based on the concept above, this research evaluated the official websites of each city selected. Nineteen of 100 cities, however, do not have official city websites or were not accessible during the survey period: ten in Africa (71%), seven in Asia (22%), and two in North America (20%). As a result, this research evaluated only 81 cities of the 100 cities initially selected. Our research examined local government services using an e-governance model of increasingly sophisticated e-government services. As noted above, Moon (2002) developed a framework for categorizing e-government models based on the following components: information

dissemination, two-way communication, services, integration, and political participation. Our methodology for evaluating e-government services includes such components; however, we have added an additional factor, security.

That additional e-governance factor was grounded in recent calls for increased security, particularly of our public information infrastructure. Concern over the security of the information systems underlying government applications has led some researchers to the conclusion that e-governance must be built on a secure infrastructure that respects the privacy of its users (Kaylor, 2001). Our E-Governance Performance Index for evaluating city and municipal websites consists of five components: 1. Security and Privacy; 2. Usability; 3. Content; 4. Services; and 5. Citizen Participation. Table 2-2 summarizes the measures used in our research to assess a website's capabilities in each of those five categories.

NEW MEASURES

The 2005 Rutgers-SKKU E-Governance Performance Index differs slightly from the one used in 2003. In 2003, we utilized a total of 92 measures, of which 45 were dichotomous. This most recent study has further developed the research instrument to include 98 measures, of which 43 are dichotomous. The most significant change was in the Citizen Participation component, where six new research questions were added. These new questions are, in part, recognition of the growing literature focusing on the various methods for more digitally-based democracy. These new questions survey the presence and functions of municipal forums, online decision-making (e-petitions, e-referenda), and online surveys and polls. The new questions for the Citizen Participation component bring the total number of questions to 20, with a total possible raw score of 55. In addition, one question was removed from the Security and Privacy component. That question focused on the scanning of viruses during downloadable files from the municipal website. This aspect was found to be more dependent on personal computers than as a function of a municipal website. The removal of

the question for the Security and Privacy component brings the total number of questions to 18, with a total possible raw score of 25. The final change to the E-Governance Performance Index was a question added to the Content component. The additional question focuses on the number of possible downloadable documents from a municipal website. The new question for Content brings the total number of questions to 20, with a total possible raw score of 48.

The changes to the E-Governance Performance Index have helped make this ongoing survey of municipal websites one of the most thorough in the field of e-governance research. The Index now has a total of 98 questions, with a total possible raw score of 219. Given the changes to the survey instrument between 2003 and 2005, the method of weighting each component for a possible score of 20 and a total score of 100, allows for a consistency in comparisons over time. Table 2-2, E-Governance Performance Measures, summarizes the 2005 survey instrument, and in Appendix A we present an overview of the criteria used during the evaluation.

[Table 2-2] E-Governance Performance Measures

E-governance Category	**Key Concepts**	**Raw Score**	**Weighted Score**	**Keywords**
Security/ Privacy	18	25	20	Privacy policies, authentication, encryption, data management, and use of cookies
Usability	20	32	20	User-friendly design, branding, length of homepage, targeted audience links or channels, and site search capabilities
Content	20	48	20	Access to current accurate information, public documents, reports, publications, and multimedia materials
Service	20	59	20	Transactional services involving purchase or register, interaction between citizens, businesses and government
Citizen Participation	20	55	20	Online civic engagement, internet based policy deliberation, and citizen based performance measurement
Total	98	219	100	

SURVEY INSTRUMENT COMPARISON

Our survey instrument is the most thorough in practice for e-governance research today. With 98 measures and five distinct categorical areas of e-governance research, the survey instrument is unlike any other. In studies of e-governance practices worldwide, our survey instrument differs quite significantly from others. The following section reviews four of the most prominent and encompassing longitudinal worldwide e-governance surveys. The critiques of the Annual Global Survey at Brown University's Taubman Center for Public Policy (West, 2001-2005), the United Nations Global Survey of E-government, the Accenture E-government Leadership Survey and Capgemini's European Commission Report are intended to highlight the distinct differences between the survey instruments and results. We do not suggest that the results and data findings we present here should be accepted in place of those by the Taubman Center, the UN, Accenture or Capgemini, but rather should be considered in conjunction with the other surveys. The findings and rankings of e-governance worldwide can be understood only by highlighting the distinct differences among the survey instruments.

The Taubman Center's Global E-government Survey is one of the only international e-government studies that have been conducted yearly for the past five years. Since 2001, the researchers at the Taubman Center have utilized an index instrument that measures the presence of website features. That instrument is geared toward specific web functions, with limited attention addressing privacy/security or usability. The e-governance area of Citizen Participation is only measured by one item. Moreover, their survey instrument has changed substantially from year to year. One of the problems with a rapidly evolving instrument is in the applicability of comparisons over the years. Our survey instrument has also changed with the inclusion of new questions, specifically in the Citizen Participation section. However, the Taubman Center's survey instrument has decreased its measurement criteria over the years. In

2001 and 2002, the numbers of measures were 24 and 25, respectively. In 2003, 2004, and 2005 the numbers of measures decreased to 20, 19, and 19, respectively. For 2005, its measures are broken down into two groups, with 18 primary measures and one bonus measure encompassing 28 possible points. The final overall scores are converted for a possible total score of 100. We also use a final possible score of 100, with each of our five categories allowing for a possible score of 20.

In all, the number of measures in the Taubman survey is limited, with only 19 metrics. A final score of e-governance performance is reflective of the specific questions focused on web features that are captured by those 19 measures. One of the consequences of this methodology is the limited differentiation in performance of e-governance among countries. As a result many of the countries received the same scores. In addition, there is an inconsistency in the annual rankings, specifically in the non-English websites. For example, the Republic of Korea has fluctuated in rankings as follows: 45th in 2001, 2nd in 2002, 87th in 2003, 32nd in 2004, and 86th in 2005. In other international findings, however, such as the United Nations Global E-government Survey, the Republic of Korea has consistently been recognized as one of the best in e-governance performance (4th in 2004 and 2005). One other example is Bolivia, which has also significantly fluctuated over the years in rankings. Bolivia was ranked 18th in 2001, 164th in 2002, 119th in 2003, 20th in 2004, and 225th in 2005. These significant variations in rankings can, in part, be attributed to the limited number of measures, allowing for shifting variations in overall scores. However, this can also be attributed to the method of not using native speakers when evaluating all the websites. In some cases, researchers at the Taubman Center have utilized language translation software available online, such as http://babelfish.altavista.com. Online translation software, however, can misinterpret specific languages and phrases.

The United Nations Global E-government Survey is also one of the few longitudinal studies of web presence throughout the world. The UN has two specific studies that it produces: an E-

government Readiness index and an E-participation index. The E-government Readiness index incorporates web measures, telecommunication infrastructure and human capital. Their web measure index is a quantitative measure, evaluating national websites. Their evaluation is based on binary values (presence/absence of a service). Their E-participation index is a qualitative study, with 21 measures used to assess the quality, relevance, usefulness, and willingness of government websites in providing online information and service/participation tools for citizens. The UN Global E-government Survey takes methodological precautions to ensure accuracy and fairness. The surveying of websites is done within a 60-day "window" and websites are re-evaluated by senior researches for purposes of consistency. In addition, the survey incorporates native language speakers when necessary in an effort to review every website in the official or predominant language. However, this survey does differ from our research in that the UN studies central government websites, while we focus on large municipal websites throughout the world.

Accenture conducts a third global e-government study. Accenture's annual E-government Leadership report highlights the performance of 22 selected countries. The most recent report (2004) measured 206 services when assessing national government websites. The 206 national government services were divided between 12 service sectors they constructed: eDemocracy, education, human services, immigration, justice and security, postal, procurement, regulation, participation, revenue and customs, and transport. As an effort toward reliability, the research was conducted in a two-week period. The Accenture report, however, only focuses on 22 countries. The Accenture study omits numerous countries throughout the world, as well as many of the top performing governments in e-governance. Similarly, a study conducted by Capgemini on behalf of the European Commission, is limited in international focus. This study is limited to nations in the European Union and only utilizes 20 basic public services as measures in the research study. The methodology is split between studying services to citizens (12) and services to businesses (8). Similar to the UN and

Taubman Center studies, the Accenture and Capgemini studies focus on national government websites, a distinguishing aspect from our research.

The survey instruments of the four studies above highlight the various methods for studying e-governance throughout the world. Therefore, in studying e-governance worldwide, all five instruments and findings provide specific perspectives that should be considered as unique contributions to the field of e-governance.

SURVEY INSTRUMENT 2005

The following section highlights the specific design of our survey instrument as presented in our 2004 report, with changes noted throughout. As stated above, previous e-governance research varies in the use of scales to evaluate government websites. For example, one researcher uses an index consisting of 25 dichotomous (yes or no) measures (West 2001); other assessments use a more sophisticated four-point scale (Kaylor, 2001) for assessing each measure. Our 2005 survey instrument utilizes 98 measures, of which 43 are dichotomous. For each of the five e-governance components, our research applies 18 to 20 measures, and for questions which were not dichotomous, each measure was coded on a four-point scale (0, 1, 2, 3; see Table 2-3 below). Furthermore, in developing an overall score for each municipality, we have equally weighted each of the five categories so as not to skew the research in favor of a particular category (regardless of the number of questions in each category). The dichotomous measures in the "service" and "citizen participation" categories correspond with values on our four point scale of "0" or "3"; dichotomous measures in "security/ privacy" or "usability" correspond to ratings of "0" or "1" on the scale.

[Table 2-3] E-governance Scale

Scale	Description
0	Information about a given topic does not exist on the website
1	Information about a given topic exists on the website (including links to other information and e-mail addresses)
2	Downloadable items are available on the website (forms, audio, video, and other one-way transactions, popup boxes)
3	Services, transactions, or interactions can take place completely online (credit card transactions, applications for permits, searchable databases, use of cookies, digital signatures, restricted access)

Our instrument placed a higher value on some dichotomous measures, due to the relative value of the different e-government services being evaluated. For example, evaluators using our instrument in the "service" category were given the option of scoring websites as either a "0" or "3" when assessing whether a site allowed users to access private information online (e.g. educational records, medical records, point total of driving violations, lost property). "No access" equated to a rating of "0." Allowing residents or employees to access private information online was a higher order task that required more technical competence, and was clearly an online service, or "3," as defined in Table 2-3.

On the other hand, when assessing a site as to whether or not it had a privacy statement or policy, evaluators were given the choice of scoring the site as "0" or "1." The presence or absence of a security policy was clearly a content issue that emphasized placing information online, and corresponded with a value of "1" on the scale outlined in Table 2-3. The differential values assigned to dichotomous categories were useful in comparing the different components of municipal websites with one another.

To ensure reliability, each municipal website was assessed by two evaluators, and in cases where significant variation (+ or – 10%) existed on the weighted score between evaluators, websites were

analyzed a third time[3] Furthermore, an example for each measure indicated how to score the variable. Evaluators were also given comprehensive written instructions for assessing websites.

E-GOVERNANCE CATEGORIES

This section details the five e-governance categories and discusses specific measures that were used to evaluate websites. The discussion of security and privacy examines privacy policies and issues related to authentication. Discussion of the Usability category involves traditional web pages, forms and search tools. The Content category is addressed in terms of access to contact information, access to public documents and disability access, as well as access to multimedia and time sensitive information. The section on services examines interactive services, services that allow users to purchase or pay for services, and the ability of users to apply or register for municipal events or services online. Finally, the measures for citizen participation involve examining how local governments are engaging citizens and providing mechanisms for citizens to participate in government online.

The first part of our analysis examined the security and privacy of municipal websites in two key areas, privacy policies and authentication of users. In examining municipal privacy policies, we determined whether such a policy was available on every page that accepted data, and whether or not the word “privacy” was used in the link to such a statement. In addition, we looked for privacy policies on every page that required or accepted data. We were also interested in determining if privacy policies identified the agencies collecting the information, and whether the policy identified exactly what data was being collected on the site.

Our analysis checked to see if the intended use of the data was explicitly stated on the website. The analysis examined whether the privacy policy addressed the use or sale of data collected on the

[3] The only website requiring a third evaluator for the 2005 survey was Brussels, Belgium.

website by outside or third party organizations. Our research also determined if there was an option to decline the disclosure of personal information to third parties.[4] This included other municipal agencies, other state and local government offices, or businesses in the private sector. Furthermore, we examined privacy policies to determine if third party agencies or organizations were governed by the same privacy policies as was the municipal website. We also determined whether users had the ability to review personal data records and contest inaccurate or incomplete information.

In examining factors affecting the security and privacy of local government websites, we addressed managerial measures that limit access of data and assure that it is not used for unauthorized purposes. The use of encryption in the transmission of data, as well as the storage of personal information on secure servers, was also examined. We also determined if websites used digital signatures to authenticate users. In assessing how or whether municipalities used their websites to authenticate users, we examined whether public or private information was accessible through a restricted area that required a password and/or registration.

A growing e-governance trend at the local level is for municipalities to offer their website users access to public, and in some cases private, information online. Other research has discussed the governance issues associated with sites that choose to charge citizens for access to public information (West, 2001). We add our own concerns about the impact of the digital divide if public records are available only through the Internet or if municipalities insist on charging a fee for access to public records. Our analysis specifically addresses online access to public databases by determining if public information such as property tax assessments, or private information such as court documents, is available to users of municipal websites. In addition, there are concerns that public agencies will use their

[4] The New York City privacy policy (www.nyc.gov/privacy) defines third parties as follows: “third parties are computers, computer networks, ISPs, or application service providers ("ASPs") that are non-governmental in nature and have direct control of what information is automatically gathered, whether cookies are used, and how voluntarily provided information is used.”

websites to monitor citizens or create profiles based on the information they access online. For example, many websites use "cookies" or "web beacons"[5] to customize their websites for users, but that technology can also be used to monitor Internet habits and profile visitors to websites. Our analysis examined municipal privacy policies to determine if they addressed the use of cookies or web beacons.

This research also examined the usability of municipal websites. Simply stated, we wanted to know if sites were "user-friendly." To address usability concerns we adapted several best practices and measures from other public and private sector research (Giga, 2000). Our analysis of usability examined three types of websites: traditional web pages, forms, and search tools.

To evaluate traditional web pages written using hypertext markup language (html), we examined issues such as branding and structure (e.g. consistent color, font, graphics, page length etc.). For example, we looked to see if all pages used consistent color, formatting, "default colors" (e.g. blue links and purple visited links) and underlined text to indicate links. Other items examined included whether system hardware and software requirements were clearly stated on the website.

In addition, our research examined each municipality's homepage to determine if it was too long (two or more screen lengths) or if alternative versions of long documents, such as .pdf or .doc files, were available. The use of targeted audience links or

[5] The New York City privacy policy (www.nyc.gov/privacy) gives the following definitions of cookies and web bugs or beacons: "Persistent cookies are cookie files that remain upon a user's hard drive until affirmatively removed, or until expired as provided for by a pre-set expiration date. Temporary or "Session Cookies" are cookie files that last or are valid only during an active communications connection, measured from beginning to end, between computer or applications (or some combination thereof) over a network. A web bug (or beacon) is a clear, camouflaged or otherwise invisible graphics image format ("GIF") file placed upon a web page or in hyper text markup language ("HTML") e-mail and used to monitor who is reading a web page or the relevant email. Web bugs can also be used for other monitoring purposes such a profiling of the affected party."

"channels" to customize the website for specific groups such as citizens, businesses, or other public agencies was also examined. We looked for the consistent use of navigation bars and links to the homepage on every page. The availability of a "sitemap" or hyperlinked outline of the entire website was examined. Our assessment also examined whether duplicated link names connect to the same content.

Our research examined online forms to determine their usability in submitting data or conducting searches of municipal websites. We looked at issues such as whether field labels aligned appropriately with field, whether fields were accessible by keystrokes (e.g. tabs), or whether the cursor was automatically placed in the first field. We also examined whether required fields were noted explicitly, and whether the tab order of fields was logical. For example, after a user filled out their first name and pressed the "tab" key, did the cursor automatically go to the surname field? Or, did the page skip to another field such as zip code, only to return to the surname later?

We also checked to see if form pages provided additional information about how to fix errors if they were submitted. For example, did users have to reenter information if errors were submitted, or did the site flag incomplete or erroneous forms before accepting them? Also, did the site give a confirmation page after a form was submitted, or did it return users to the homepage?

Our analysis also addressed the use of search tools on municipal websites. We examined sites to determine if help was available for searching a municipality's website, or if the scope of searches could be limited to specific areas of the site. Were users able to search only in "public works" or "the mayor's office," or did the search tool always search the entire site? We also looked for advanced search features such as exact phrase searching, the ability to match all/ any words, and Boolean searching capabilities (e.g. the ability to use AND/ OR/ NOT operators). Our analysis also addressed a site's ability to sort search results by relevance or other criteria.

Content is a critical component of any website. No matter how technologically advanced a website's features, if its content is not current, if it is difficult to navigate, or if the information provided is not correct, then it is not fulfilling its purpose. When examining website content, our research examined five key areas: access to contact information, public documents, disability access, multimedia materials, and time sensitive information. When addressing contact information, we looked for information about each agency represented on the website.

In addition, we also looked for the availability of office hours or a schedule of when agency offices are open. In assessing the availability of public documents, we looked for the availability of the municipal code or charter online. We also looked for content items, such as agency mission statements and minutes of public meetings. Other content items included access to budget information and publications. Our assessment also examined whether websites provided access to disabled users through either "bobby compliance" (disability access for the blind, http://www.cast.org/bobby) or disability access for deaf users via a TDD phone service. We also checked to see if sites offered content in more than one language.

Time sensitive information that was examined included the use of a municipal website for emergency management, and the use of a website as an alert mechanism (e.g. terrorism alert or severe weather alert). We also checked for time sensitive information such as the posting of job vacancies or a calendar of community events. In addressing the use of multimedia, we examined each site to determine if audio or video files of public events, speeches, or meetings were available.

A critical component of e-governance is the provision of municipal services online. Our analysis examined two different types of services: (1) those that allow citizens to interact with the municipality, and (2) services that allow users to register for municipal events or services online. In many cases, municipalities have developed the capacity to accept payment for municipal services and taxes. The first type of service examined, which implies

interactivity, can be as basic as forms that allow users to request information or file complaints. Local governments across the world use advanced interactive services to allow users to report crimes or violations, customize municipal homepages based on their needs (e.g. portal customization), and access private information online, such as court records, education records, or medical records. Our analysis examined municipal websites to determine if such interactive services were available.

The second type of service examined in this research determined if municipalities have the capacity to allow citizens to register for municipal services online. For example, many jurisdictions now allow citizens to apply for permits and licenses online. Online permitting can be used for services that vary from building permits to dog licenses. In addition, some local governments are using the Internet for procurement, allowing potential contractors to access requests for proposals or even bid for municipal contracts online. In other cases, local governments are chronicling the procurement process by listing the total number of bidders for a contract online, and in some cases listing contact information for bidders.

This analysis also examined municipal websites to determine if they developed the capacity to allow users to purchase or pay for municipal services and fees online. Examples of transactional services from across the United States include the payment of public utility bills and parking tickets online. In many jurisdictions, cities and municipalities allow online users to file or pay local taxes, or pay fines such as traffic tickets. In some cases, cities around the world are allowing their users to register or purchase tickets to events in city halls or arenas online.

Finally, online citizen participation in government continues to be the most recent area of e-governance study. As noted in 2003, the Internet is a convenient mechanism for citizen-users to engage their government, and also because of the potential to decentralize decision-making. We have strengthened our survey instrument in the area of Citizen Participation and once again found that the potential for online participation is still in its early stages of development.

Very few public agencies offer online opportunities for civic engagement. Our analysis looked at several ways public agencies at the local level were involving citizens. For example, do municipal websites allow users to provide online comments or feedback to individual agencies or elected officials?

Our analysis examined whether local governments offer current information about municipal governance online or through an online newsletter or e-mail listserv. Our analysis also examined the use of internet-based polls about specific local issues. In addition, we examined whether communities allow users to participate and view the results of citizen satisfaction surveys online. For example, some municipalities used their websites to measure performance and published the results of performance measurement activities online.

Still other municipalities used online bulletin boards or other chat capabilities for gathering input on public issues. Most often, online bulletin boards offer citizens the opportunity to post ideas, comments, or opinions without specific discussion topics. In some cases agencies attempt to structure online discussions around policy issues or specific agencies. Our research looked for municipal use of the Internet to foster civic engagement and citizen participation in government.

3

OVERALL RESULTS

The following chapter presents the results for all the evaluated municipal websites during 2005. Table 3-1 provides the rankings for 81 municipal websites and their overall scores. The overall scores reflect the combined scores of each municipality's score in the five e-governance component categories. The highest possible score for any one city website is 100. Seoul received a score of 81.70, the highest ranked city website for 2005. Seoul's website was also the highest ranked in 2003 with a score of 73.48. New York City had the second highest ranked municipal website, with a score 72.71. New York City moved up two places from its fourth place ranking in 2003. Similarly, Shanghai, China moved up two places in ranking since 2003, with the third ranked score of 63.93 in 2005. Hong Kong and Sydney, Australia complete the top five ranked municipal websites with scores of 61.51 and 60.82, respectively. Hong Kong was also ranked in the top five in 2003; however, Sydney significantly increased in score and in ranking from 2003 (ranked 19th with a score of 37.41).

The results of the overall rankings are separated by continent in Tables 3-2 through 3-7. The six predetermined continental regions had a few changes in the top ranked cities for each region. Cape Town (Africa), Seoul (Asia), New York City (North America), and Sao Paulo (Brazil) all remained the top ranked city for each continent as they were in the 2003 evaluations. Zurich replaced Rome as the highest ranked city for European cities. Sydney switched places with Auckland as the only two Oceanian cities evaluated. Also included in the rankings by continent are the scores for each of the five e-governance component categories.

[Table 3-1] Overall E-governance Rankings (2005)

Ranking	City	Country	Score
1	Seoul	Republic of Korea	**81.70**
2	New York	United States	**72.71**
3	Shanghai	China	**63.93**
4	Hong Kong	Hong Kong	**61.51**
5	Sydney	Australia	**60.82**
6	Singapore	Singapore	**60.22**
7	Tokyo	Japan	**59.24**
8	Zurich	Switzerland	**55.99**
9	Toronto	Canada	**55.10**
10	Riga	Latvia	**53.95**
11	Warsaw	Poland	**53.26**
12	Reykjavik	Iceland	**52.24**
13	Sofia	Bulgaria	**49.11**
14	Prague	Czech Rep.	**47.27**
15	Luxembourg	Luxembourg	**46.58**
16	Amsterdam	Netherlands	**46.44**
17	Paris	France	**45.49**
18	Macao	Macao	**45.48**
19	Dublin	Ireland	**44.10**
20	Bratislava	Slovak Republic	**43.65**
21	London	United Kingdom	**43.17**
22	Rome	Italy	**42.67**
23	Berlin	Germany	**42.55**
24	Copenhagen	Denmark	**42.54**
25	Istanbul	Turkey	**42.39**
26	Tallinn	Estonia	**41.02**
27	Ho Chi Minh	VietNam	**40.75**
28	Budapest	Hungary	**40.40**
29	Oslo	Norway	**39.22**
30	Auckland	New Zealand	**39.05**
31	Cape Town	South Africa	**37.88**
32	Stockholm	Sweden	**36.28**
33	Sao Paulo	Brazil	**35.88**
34	Brussels	Belgium	**34.68**
35	Helsinki	Finland	**34.68**
36	Moscow	Russia	**34.62**
37	Vienna	Austria	**34.62**
38	Jerusalem	Israel	**33.04**
39	Jakarta	Indonesia	**33.03**

[Table 3-1] Overall E-governance Rankings (Cont. 2005)

40	Tegucigalpa	Honduras	**32.40**
41	Kiev	Ukraine	**31.10**
42	Lisbon	Portugal	**30.27**
43	Vilnius	Lithuania	**30.18**
44	Belgrade	Serbia & Montenegro	**30.03**
45	Cairo	Egypt	**29.49**
46	Buenos Aires	Argentina	**29.05**
47	Quezon City	Philippines	**27.78**
48	Mumbai	India	**27.69**
49	Minsk	Belarus	**26.91**
50	Dubai	U.A.E.	**25.12**
51	Bangkok	Thailand	**24.88**
52	Riyadh	Saudi Arabia	**24.68**
53	Santiago	Chile	**24.22**
54	Madrid	Spain	**23.24**
55	Athens	Greece	**23.08**
56	Ljubljana	Slovenia	**22.80**
57	Bogota	Colombia	**22.00**
58	Lagos	Nigeria	**21.68**
59	Nicosia	Cyprus	**21.16**
60	San Jose	Costa Rica	**20.76**
61	Kuala Lumpur	Malaysia	**20.35**
62	Karachi	Pakistan	**19.15**
63	Mexico City	Mexico	**18.55**
64	Bucharest	Romania	**18.11**
65	Amman	Jordan	**16.77**
66	Beirut	Lebanon	**16.63**
67	Colombo	Sri Lanka	**16.36**
68	Caracas	Venezuela	**16.04**
69	Guayaquil	Ecuador	**15.40**
70	San Salvador	El Salvador	**14.91**
71	Lima	Peru	**14.88**
72	La Paz	Bolivia	**14.74**
73	Dhaka	Bangladesh	**14.20**
74	Guatemala City	Guatemala	**14.12**
75	Panama City	Panama	**13.11**
76	Tehran	Iran	**12.89**
77	Zagreb	Croatia	**12.89**
78	Chisinau	Moldova, Rep. of	**12.15**
79	Montevideo	Uruguay	**11.78**
80	Nairobi	Kenya	**10.43**
81	Tashkent	Uzbekistan	**4.48**

[Table 3-2] Overall Results of Evaluation in African Cities (2005)

Ranking	City	Score	Privacy	Usability	Content	Service	Participation
1	Cape Town	**37.88**	2.40	11.56	11.88	6.95	5.09
2	Cairo	**29.49**	4.00	11.88	8.33	2.37	2.91
3	Lagos	**21.68**	1.20	12.19	3.54	2.20	2.55
4	Nairobi	**10.43**	1.60	6.56	2.08	0.00	0.18

[Table 3-3] Overall Results of Evaluation in Asian Cities (2005)

Ranking	City	Score	Privacy	Usability	Content	Service	Participation
1	Seoul	**81.70**	17.60	17.81	16.04	16.61	13.64
2	Shanghai	**63.93**	12.00	18.75	13.13	11.69	8.36
3	Hong Kong	**61.51**	15.60	16.25	13.75	13.73	2.18
4	Singapore	**60.22**	10.40	15.94	11.67	14.58	7.64
5	Tokyo	**59.24**	12.00	16.25	12.29	10.34	8.36
6	Macao	**45.48**	10.40	13.44	13.13	5.42	3.09
7	Istanbul	**42.39**	11.60	11.88	8.96	5.59	4.36
8	HoChi Minh	**40.75**	5.60	14.38	8.33	8.98	3.45
9	Jerusalem	**33.03**	0.00	16.88	9.58	2.20	4.36
10	Jakarta	**32.77**	2.40	11.88	10.83	2.20	5.45
11	Quezon City	**27.78**	4.80	14.06	3.75	3.90	1.27
12	Mumbai	**27.69**	10.40	10.31	4.38	1.69	0.91
13	Dubai	**25.12**	2.40	9.69	4.38	5.93	2.73
14	Bangkok	**24.88**	0.00	8.13	4.17	6.95	5.64
15	Riyadh	**24.68**	3.20	13.13	5.00	1.36	2.00
16	Nicosia	**21.16**	0.00	12.19	4.79	2.54	1.64
17	Kuala Lumpur	**20.35**	0.00	11.56	3.96	3.56	1.27
18	Karachi	**19.15**	0.00	8.75	5.00	3.22	2.18
19	Amman	**16.77**	0.00	11.88	1.67	0.68	2.55
20	Beirut	**16.63**	0.00	9.06	3.13	1.36	3.09
21	Colombo	**16.36**	0.00	11.25	2.29	1.19	1.64
22	Dhaka	**14.20**	0.00	9.06	2.50	1.19	1.45
23	Tehran	**12.89**	0.00	8.44	1.04	3.05	0.36
24	Tashkent	**4.48**	0.00	4.06	0.42	0.00	0.00

[Table 3-4] Overall Results of Evaluation in European Cities (2005)

Ranking	City	Score	Privacy	Usability	Content	Service	Participation
1	Zurich	**55.99**	16.40	14.69	13.96	9.49	1.45
2	Riga	**53.95**	6.80	17.50	13.75	6.44	9.45
3	Warsaw	**53.26**	0.00	15.31	13.54	11.86	12.55
4	Reykjavik	**52.24**	11.60	13.13	13.54	10.34	3.64
5	Sofia	**49.11**	8.00	13.44	11.67	7.46	8.55
6	Prague	**47.27**	0.00	16.88	10.21	10.00	10.18
7	Luxembourg	**46.58**	7.20	15.31	11.88	7.29	4.91
8	Amsterdam	**46.44**	10.40	12.50	9.79	5.93	7.82
9	Paris	**45.49**	8.80	15.94	11.46	4.75	4.55
10	Dublin	**44.10**	8.00	16.88	11.04	4.92	3.27
11	Bratislava	**43.65**	0.00	15.94	11.04	5.76	10.91
12	London	**43.17**	4.80	11.88	9.17	6.78	10.55
13	Rome	**42.67**	13.20	12.50	7.71	7.63	1.64
14	Berlin	**42.55**	12.80	8.75	8.54	8.64	3.82
15	Copenhagen	**42.54**	10.40	15.00	9.58	6.10	1.45
16	Tallinn	**41.02**	1.20	13.75	14.79	7.46	3.82
17	Budapest	**40.40**	1.20	15.00	11.04	6.61	6.55
18	Oslo	**39.22**	0.00	17.19	10.00	9.49	2.55
19	Stockholm	**36.28**	0.00	16.25	10.63	5.59	3.82
20	Brussels	**34.68**	2.40	12.29	10.83	4.97	4.36
21	Helsinki	**34.62**	0.00	14.38	10.00	6.61	3.64
22	Moscow	**34.62**	1.60	15.00	7.71	5.76	4.55
23	Vienna	**33.04**	11.60	11.88	6.25	1.86	1.45
24	Kiev	**31.10**	2.40	15.31	6.67	2.54	4.18
25	Lisbon	**30.27**	1.20	13.75	8.96	5.08	1.27
26	Vilnius	**30.18**	0.00	10.94	10.42	6.10	2.73
27	Belgrade	**30.03**	0.00	13.75	6.46	4.92	4.91
28	Minsk	**26.91**	0.00	12.50	6.46	3.22	4.73
29	Madrid	**23.24**	2.80	11.88	3.75	3.73	1.09
30	Athens	**23.08**	0.00	9.38	6.88	3.56	3.27
31	Ljubljana	**22.80**	1.60	11.25	6.04	3.73	0.18
32	Bucharest	**18.11**	0.00	9.69	4.79	2.54	1.09
33	Zagreb	**12.89**	1.20	9.69	1.67	0.34	0.00
34	Chisinau	**12.15**	0.00	7.52	3.75	0.51	0.36

[Table 3-5] Overall Results of Evaluation in North American Cities (2005)

Ranking	City	Score	Privacy	Usability	Content	Service	Participation
1	New York	**72.71**	16.00	19.06	14.79	15.76	7.09
2	Toronto	**55.10**	11.20	14.06	11.46	9.83	8.55
3	Tegucigalpa	**32.40**	5.20	10.31	8.13	2.03	6.73
4	San Jose	**20.76**	1.20	9.06	4.58	3.73	2.18
5	Mexico City	**18.55**	0.00	9.69	3.75	4.75	0.36
6	San Salvador	**14.91**	0.00	7.19	3.54	2.54	1.64
7	Guatemala City	**14.12**	1.20	8.44	1.25	3.05	0.18
8	Panama City	**13.11**	0.00	5.94	3.75	2.88	0.55

[Table 3-6] Overall Results of Evaluation in Oceanian Cities (2005)

Ranking	City	Score	Privacy	Usability	Content	Service	Participation
1	Sydney	**60.82**	16.80	17.81	12.50	8.98	4.73
2	Auckland	**39.05**	7.20	15.63	6.67	6.10	3.45

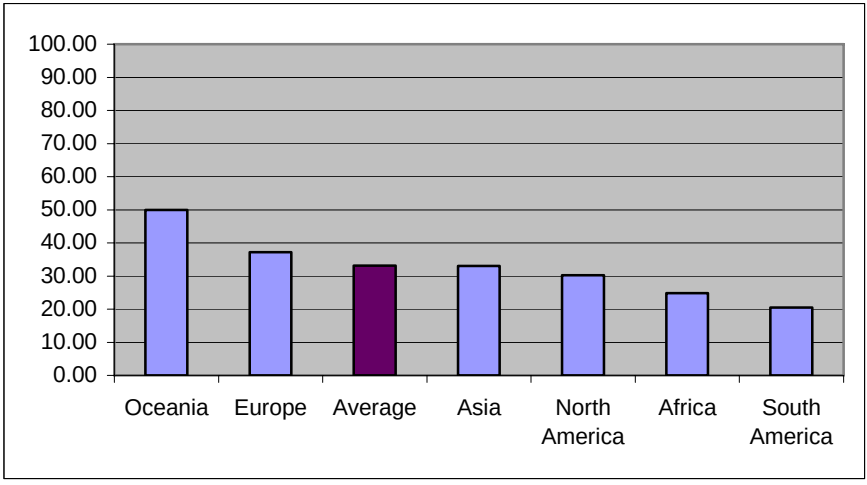
[Table 3-7] Overall Results of Evaluation in South American Cities (2005)

Ranking	City	Score	Privacy	Usability	Content	Service	Participation
1	Sao Paulo	**35.88**	1.20	14.69	8.33	9.66	2.00
2	Buenos Aires	**29.05**	2.40	11.56	5.83	7.80	1.45
3	Santiago	**24.22**	0.00	12.81	6.67	4.75	0.00
4	Bogota	**22.00**	1.20	13.13	4.58	2.54	0.55
5	Caracas	**16.04**	0.00	12.19	2.50	1.36	0.00
6	Guayaquil	**15.40**	0.00	10.00	4.38	0.85	0.18
7	Lima	**14.88**	1.20	5.31	5.42	1.86	1.09
8	La Paz	**14.74**	0.00	7.19	3.96	3.05	0.55
9	Montevideo	**11.78**	0.00	7.81	2.08	1.53	0.36

The average scores for each continent are presented in Figure 3-1. Oceania was once again the highest ranked continent with an average score of 49.94. Europe, with a score of 37.17, moved up one spot as the second highest ranked continent. The overall average score for all municipalities is 33.11 for 2005, an increase from 28.49 in 2003. The remaining continents all have average scores below the overall average. In 2003, Asian cities were above the overall average

score with 30.38, and although they have increased to an overall score of 33.05 for 2005, they have dropped to third in ranking and below the overall average score of 33.11. Ranked fourth, as it was in 2003, is North America, with an overall average score of 30.21 Moving up one spot to fifth is Africa, with an overall average score of 24.87, and increase from its 17.66 score in 2003. Dropping into the sixth and final ranking for 2005 is South America, with an average score of 20.45. Although South America increased from its score of 20.05 in 2003, it fell behind Africa in overall rankings by continent. A comparison between the evaluation results by continent in 2003 and 2005 are also presented in Chapter 10, with comparison tables and figures. It is important to note that the overall average score for evaluated municipalities increased 4.62 points.

[Figure 3-1] Average Score by Continent (2005)



OECD MEMBER DATA

The following tables and figures compare the results between OECD member countries and non-OECD member countries. In all, 30 countries represent OECD member countries, and the largest municipality for each of these countries was evaluated and included in the results. Fifty-one non-OECD member

countries are also included in the evaluations. Seoul, Korea was the highest ranked municipality for OECD member countries and Shanghai, China was the highest ranked municipality for non-OECD member countries. Tables 3-8 and 3-9 present the overall score for each municipality grouped into OECD member countries and non-OECD member countries.

[Table 3-8] Evaluation Results for OECD Member Countries (2005)

Ranking	City	Country	Score
1	Seoul	Republic of Korea	**81.70**
2	New York	United States	**72.71**
3	Sydney	Australia	**60.82**
4	Tokyo	Japan	**59.24**
5	Zurich	Switzerland	**55.99**
6	Toronto	Canada	**55.10**
7	Warsaw	Poland	**53.26**
8	Reykjavik	Iceland	**52.24**
9	Prague	Czech Rep.	**47.27**
10	Luxembourg city	Luxembourg	**46.58**
11	Amsterdam	Netherlands	**46.44**
12	Paris	France	**45.49**
13	Dublin	Ireland	**44.10**
14	Bratislava	Slovak Republic	**43.65**
15	London	United Kingdom	**43.17**
16	Rome	Italy	**42.67**
17	Berlin	Germany	**42.55**
18	Copenhagen	Denmark	**42.54**
19	Istanbul	Turkey	**42.39**
20	Budapest	Hungary	**40.40**
21	Oslo	Norway	**39.22**
22	Auckland	New Zealand	**39.05**
23	Stockholm	Sweden	**36.28**
24	Brussels	Belgium	**34.68**
25	Helsinki	Finland	**34.62**
26	Vienna	Austria	**33.04**
27	Lisbon	Portugal	**30.27**
28	Madrid	Spain	**23.24**
29	Athens	Greece	**23.08**
30	Mexico City	Mexico	**18.55**

[Table 3-9] Evaluation Results for OECD Non-Member Countries (2005)

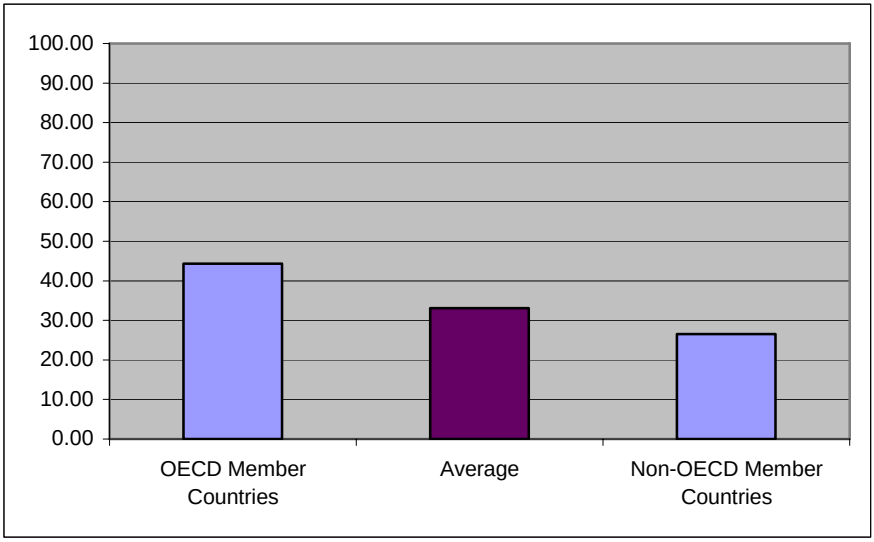
Ranking	City	Country	Score
1	Shanghai	China	**63.93**
2	Hong Kong	Hong Kong	**61.51**
3	Singapore	Singapore	**60.22**
4	Riga	Latvia	**53.95**
5	Sofia	Bulgaria	**49.11**
6	Macao	Macao	**45.48**
7	Tallinn	Estonia	**41.02**
8	Ho Chi Minh	VietNam	**40.75**
9	Cape Town	South Africa	**37.88**
10	Sao Paulo	Brazil	**35.88**
11	Moscow	Russia	**34.62**
12	Jerusalem	Israel	**33.03**
13	Jakarta	Indonesia	**32.77**
14	Tegucigalpa	Honduras	**32.40**
15	Kiev	Ukraine	**31.10**
16	Vilnius	Lithuania	**30.18**
17	Belgrade	Serbia & Montenegro	**30.03**
18	Cairo	Egypt	**29.49**
19	Buenos Aires	Argentina	**29.05**
20	Quezon City	Philippines	**27.78**
21	Mumbai	India	**27.69**
22	Minsk	Belarus	**26.91**
23	Dubai	U.A.E.	**25.12**
24	Bangkok	Thailand	**24.88**
25	Riyadh	Saudi Arabia	**24.68**
26	Santiago	Chile	**24.22**
27	Ljubljana	Slovenia	**22.80**
28	Bogota	Colombia	**22.00**
29	Lagos	Nigeria	**21.68**
30	Nicosia	Cyprus	**21.16**
31	San Jose	Costa Rica	**20.76**
32	Kuala Lumpur	Malaysia	**20.35**
33	Karachi	Pakistan	**19.15**
34	Bucharest	Romania	**18.11**
35	Amman	Jordan	**16.77**
36	Beirut	Lebanon	**16.63**
37	Colombo	Sri Lanka	**16.36**
38	Caracas	Venezuela	**16.04**
39	Guayaquil	Ecuador	**15.40**

[Table 3-9] Results for OECD Non-Member Countries (Cont., 2005)

Ranking	City	Country	Score
40	San Salvador	El Salvador	**14.91**
41	Lima	Peru	**14.88**
42	La Paz	Bolivia	**14.74**
43	Dhaka	Bangladesh	**14.20**
44	Guatemala City	Guatemala	**14.12**
45	Panama City	Panama	**13.11**
46	Tehran	Iran	**12.89**
47	Zagreb	Croatia	**12.89**
48	Chisinau	Moldova, Rep. of	**12.15**
49	Montevideo	Uruguay	**11.78**
50	Nairobi	Kenya	**10.43**
51	Tashkent	Uzbekistan	**4.48**

The results above are further analyzed (below) through grouped averages. Figure 3-2 highlights how the OECD member countries have a combined average of 44.35, well above the overall average for all municipalities, 33.11. Non-OECD member countries have an overall average of 26.50. The increase for OECD member countries from 2003 was 8.01 points, and for non-OECD member countries there was an increase of only 2.24 from 2003. More importantly, the gap between OECD and non-OECD member countries increased since the 2003 evaluation. The difference in 2003 between the average scores of OECD and non-OECD member countries was 12.08. Based on the 2005 evaluations, the gap has increased to 17.85. The increase in the overall average of scores has been predominately a result of OECD member countries improving overall municipal website performance.

[Figure 3-2] Average Score of Cities in OECD Member and Non-Member Countries (2005)

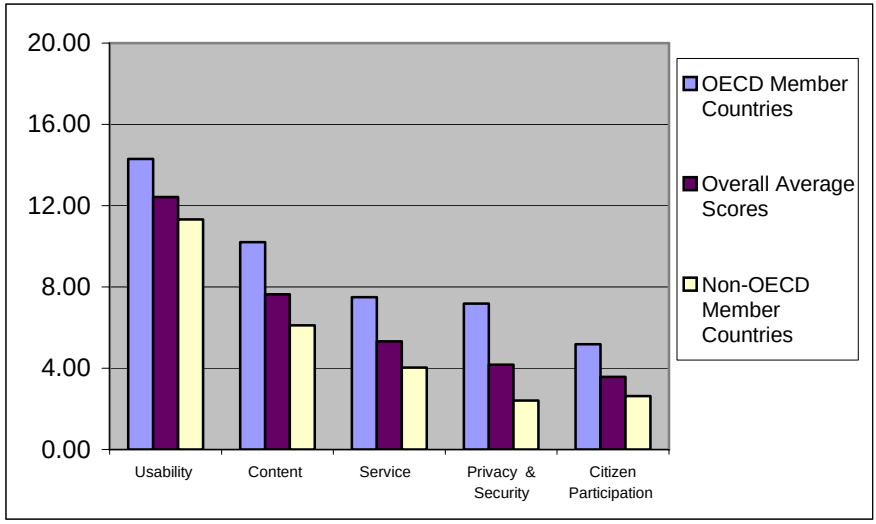


To further highlight the results between OECD and non-OECD member countries, the results presented below distinguish results by the five e-governance categories. Table 3-10 presents the scores for OECD member countries, non-OECD member countries and overall average scores for each of the e-governance categories: Usability, Content, Service, Privacy/Security, and Citizen Participation. As would be expected, the average score for OECD member countries in each e-governance category is higher than the overall average score for each category. For non-OECD member countries, the average scores in each category are lower than the overall averages for each category. Most notably, the difference between OECD and non-OECD member countries in the area of Privacy and Security is 4.77. This is the largest difference in average scores among the five categories. Figure 3-3 visually represents this same data.

[Table 3-10] Average Score of E-governance Categories in OECD Member and Non-Member Countries (2005)

	Usability	Content	Service	Privacy & Security	Citizen Participation
OECD Member Countries	14.30	10.21	7.50	7.17	5.18
Overall Average Scores	12.42	7.63	5.32	4.17	3.57
Non-OECD Member Countries	11.32	6.12	4.03	2.41	2.63

[Figure 3-3] Average Score by E-governance Categories in OECD Member and Non-Member Countries (2005)



The overall results presented in this chapter highlight an overall increase in scores among municipalities surveyed in 2003 and the same municipalities surveyed in 2005. The highest ranked

municipalities in each continent have, for the most part, remained the same in the 2005 evaluation as in the 2003 evaluation. The results, when analyzed by OECD and non-OECD member countries, highlight a growing gap between the two groups. The results of the evaluation will be discussed in further detail in the following chapters.

4

PRIVACY AND SECURITY

Privacy and security results indicate that Seoul, Sydney, Zurich, New York, and Hong Kong are top ranked cities in the category of privacy and security. New to the top five are Sydney and Zurich. Sydney was ranked 11th in 2003 with a score of 6.79, but has improved to second overall with a score of 16.80 in 2005. Zurich was ranked 20th in 2003 with a score of 3.57, but has improved to third overall with a score of 16.40 in 2005. Table 4-1 summarizes the results for all the municipalities evaluated in this category.

The average score in this category is 4.17, an increase from a score of 2.53 in 2003. Thirty-one cities evaluated earned 0 points in this category, a decrease in the total number of municipalities that earned 0 points in 2003 (36). Many cities still have not properly understood the importance of a privacy and security policy, a very important deficiency in the development of digital governance.

[Table 4-1] Results in Privacy and Security (2005)

Ranking	City	Country	Score
1	Seoul	Republic of Korea	**17.60**
2	Sydney	Australia	**16.80**
3	Zurich	Switzerland	**16.40**
4	New York	United States	**16.00**
5	Hong Kong SAR	Hong Kong, SAR	**15.60**
6	Rome	Italy	**13.20**
7	Berlin	Germany	**12.80**
8	Shanghai	China	**12.00**
8	Tokyo	Japan	**12.00**
10	Istanbul	Turkey	**11.60**
10	Reykjavik	Iceland	**11.60**
10	Vienna	Austria	**11.60**
13	Toronto	Canada	**11.20**
14	Amsterdam	Netherlands	**10.40**
14	Copenhagen	Denmark	**10.40**
14	Macao SAR	Macao, SAR	**10.40**
14	Mumbai	India	**10.40**
14	Singapore	Singapore	**10.40**
19	Paris	France	**8.80**
20	Dublin	Ireland	**8.00**
20	Sofia	Bulgaria	**8.00**
22	Auckland	New Zealand	**7.20**
22	Luxembourg city	Luxembourg	**7.20**
24	Riga	Latvia	**6.80**
25	Ho Chi Minh	VietNam	**5.60**
26	Tegucigalpa	Honduras	**5.20**
27	London	United Kingdom	**4.80**
27	Quezon City	Philippines	**4.80**
29	Cairo	Egypt	**4.00**
30	Riyadh	Saudi Arabia	**3.20**
31	Madrid	Spain	**2.80**
32	Brussels	Belgium	**2.40**
32	Buenos Aires	Argentina	**2.40**
32	Cape Town	South Africa	**2.40**
32	Dubai	U.A.E.	**2.40**
32	Jakarta	Indonesia	**2.40**
32	Kiev	Ukraine	**2.40**
38	Ljubljana	Slovenia	**1.60**
38	Moscow	Russia	**1.60**

[Table 4-1] Results in Privacy and Security (Cont. 2005)

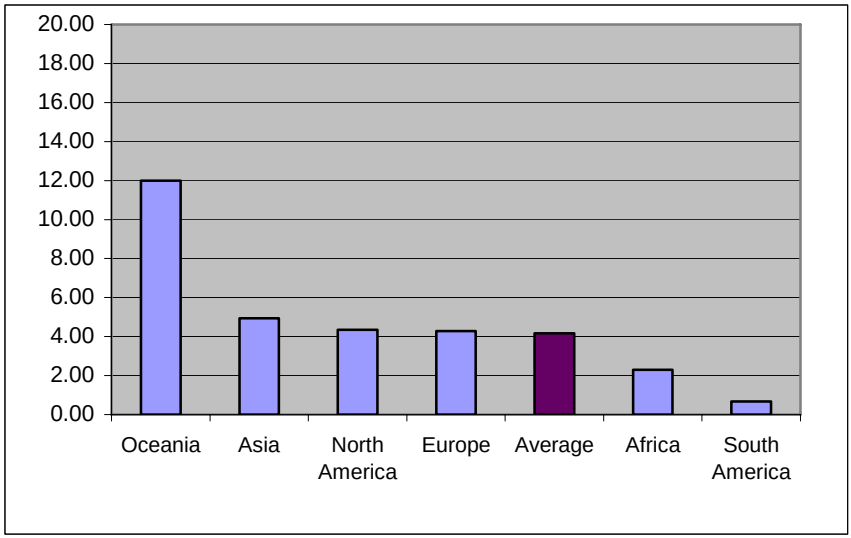
38	Nairobi	Kenya	**1.60**
41	Budapest	Hungary	**1.20**
41	Guatemala City	Guatemala	**1.20**
41	Lagos	Nigeria	**1.20**
41	Lima	Peru	**1.20**
41	Lisbon	Portugal	**1.20**
41	San Jose	Costa Rica	**1.20**
41	Bogota	Colombia	**1.20**
41	Sao Paulo	Brazil	**1.20**
41	Tallinn	Estonia	**1.20**
41	Zagreb	Croatia	**1.20**
51	Amman	Jordan	**0.00**
51	Athens	Greece	**0.00**
51	Bangkok	Thailand	**0.00**
51	Beirut	Lebanon	**0.00**
51	Belgrade	Serbia & Montenegro	**0.00**
51	Bratislava	Slovak Republic	**0.00**
51	Bucharest	Romania	**0.00**
51	Caracas	Venezuela	**0.00**
51	Chisinau	Moldova, Rep. of	**0.00**
51	Colombo	Sri Lanka	**0.00**
51	Dhaka	Bangladesh	**0.00**
51	Guayaquil	Ecuador	**0.00**
51	Helsinki	Finland	**0.00**
51	Jerusalem	Israel	**0.00**
51	Karachi	Pakistan	**0.00**
51	Kuala Lumpur	Malaysia	**0.00**
51	La Paz	Bolivia	**0.00**
51	Mexico City	Mexico	**0.00**
51	Minsk	Belarus	**0.00**
51	Montevideo	Uruguay	**0.00**
51	Nicosia	Cyprus	**0.00**
51	Oslo	Norway	**0.00**
51	Panama City	Panama	**0.00**
51	Prague	Czech Rep.	**0.00**
51	San Salvador	El Salvador	**0.00**
51	Santiago	Chile	**0.00**
51	Stockholm	Sweden	**0.00**
51	Tashkent	Uzbekistan	**0.00**
51	Tehran	Iran	**0.00**
51	Vilnius	Lithuania	**0.00**
51	Warsaw	Poland	**0.00**

Table 4-2 represents the average score in Privacy and Security by continent. Overall, cities in Oceania scored 12.00, while cities in South America scored only 0.67 in this category. Oceania remained as the continent with the highest average in scores increased, from 7.32 in 2003. South America replaced Africa as the continent with lowest average score. Africa increased from its score of .67 in 2003 to a score of 2.30 in 2005. Table 4-2 also presents the data separated by OECD and Non-OECD member countries for the category of Privacy and Security. Cities in OECD countries scored an average of 7.17, while cities in non-member countries scored only 2.41 in this category. This result indicates that cities in economically advanced countries continue to have more emphasis on privacy and security policy than do cities in less developed countries. Figures 4-1 and 4-2 illustrate the data presented Table 4-2.

[Table 4-2] Average Score in Privacy and Security by Continent and OECD Member and Non-Member Countries (2005)

	Oceania	**Asia**	**North America**	**Europe**	**Average**	**Africa**	**South America**
OECD	12.00	13.73	9.07	5.58	7.17	-	-
Privacy Averages	12.00	4.93	4.35	4.28	4.17	2.30	0.67
Non-OECD	-	3.68	1.52	1.90	2.41	2.30	0.67

[Figure 4-1] Average Score in Privacy and Security by Continent (2005)



[Figure 4-2] Average Score in Privacy and Security by OECD Member and Non-Member Countries (2005)

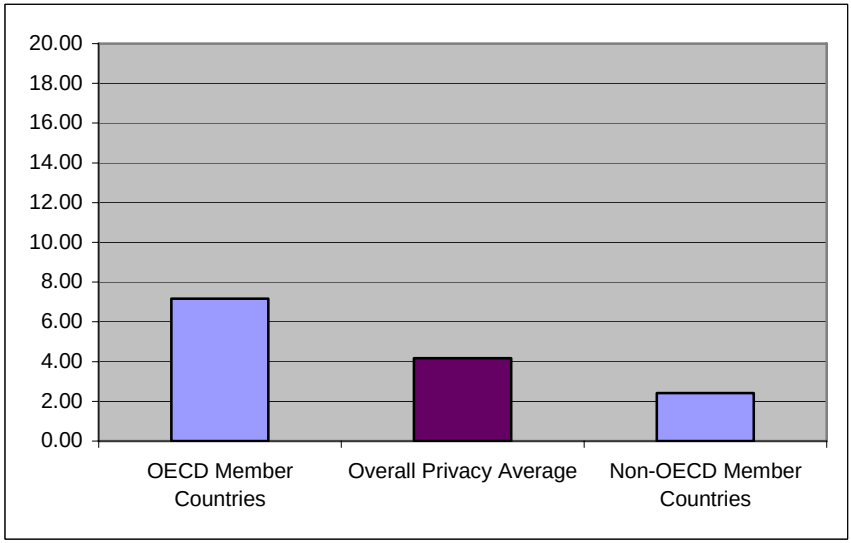


Table 4-3 lists the results of evaluation of key aspects in the category of Privacy and Security by continent. Overall, cities in Oceania and Europe are likely to pay more attention to privacy and security matters on their websites as opposed to cities in other continents. All cities evaluated in Oceania, 50% of cities in Africa, and 47% of cities in Europe have developed a privacy or security statement/policy. Cities in South America still have not developed privacy statements for their websites. The overall percentage for cities that have a privacy or security statement/policy online is 37%, an increase from 22.5% in 2003.

With regard to the use of encryption in the transmission of data, all of the cities evaluated in Oceania, as well as 25% of cities in Africa and in North America, have a policy addressing the use of encryption on their websites. The overall percentage for cities that have a policy addressing the use of encryption online is 21%, a significant increase from 5% in 2003. In addition, all cities evaluated in Oceania, 29% of cities in Europe, and 25% of cities in North America have a policy addressing the use of “cookies” or “web beacons” to track users. The overall percentage for cities that have a policy addressing the use of “cookies” or “web beacons” to track users is 23%, also an increase from 5% in 2003. There were no cities worldwide in the 2003 evaluation that had a privacy policy addressing the use of digital signatures to authenticate users; however, 9% of municipalities in the 2005 evaluation do address the use of digital signatures.

[Table 4-3] Results for Privacy and Security by Continent (2005)

	Oceania	Europe	Asia	North America	South America	Africa	Average
Privacy or Security Policy	100%	47%	29%	38%	0%	50%	37%
Use of encryption	100%	24%	17%	25%	0%	25%	21%
Use of cookies	100%	29%	21%	25%	0%	0%	23%
Digital Signature	50%	9%	13%	0%	0%	0%	9%

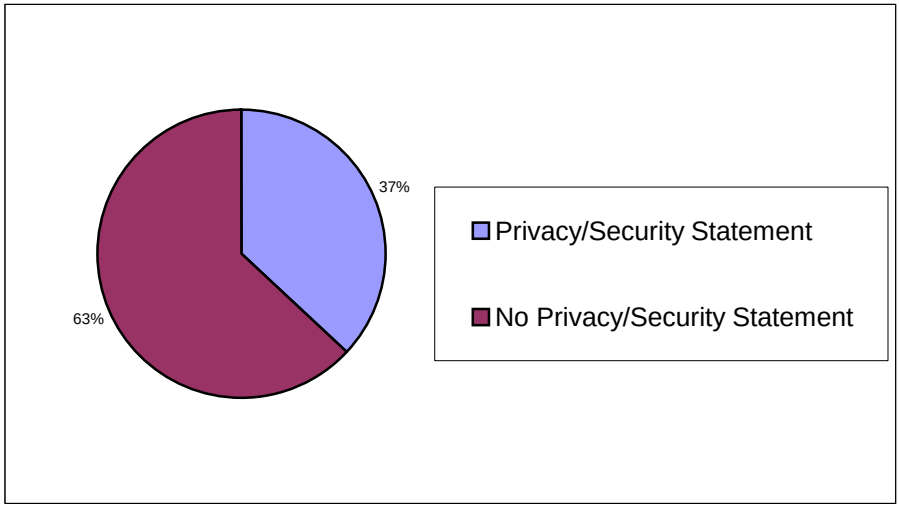
Table 4-4 lists the results of evaluation of key aspects in the category of Privacy and Security by OECD and non-OECD member countries. Overall, cities in OECD countries continue to pay more attention to privacy and security matters on their websites rather than cities in non-OECD countries. About 67% of cities evaluated in OECD countries have developed a privacy or security statement/ policy, while about 20% of cities in non-OECD countries have a privacy statement on their websites. With regard to the use of encryption in the transmission of data, some 43% of cities evaluated in OECD countries have a privacy policy addressing the use of encryption, an increase from only 3.6% in 2003. However, only 8% of cities in non-OECD countries have statements covering the use of encryption on their websites. In addition, 43% of cities evaluated in OECD countries have a privacy policy addressing the use of "cookies" or "web beacons" to track users, while only 12% of cities in non-OECD countries have statements as to the use of "cookies." In sum, while cities in OECD countries score above average throughout the world, cities in non-OECD countries continue to be below the overall average.

[Table 4-4] Results for Privacy and Security by OECD Member and Non-Member Countries (2005)

	OECD	Average	Non-OECD
Privacy or Security Policy	67%	37%	20%
Use of encryption	43%	21%	8%
Use of cookies	43%	23%	12%
Digital Signature	17%	9%	4%

In terms of the question "Does the site have a privacy or security statement/ policy?" thirty cities evaluated (37%) have privacy and security policies. Fifty-one cities (67%), however, have not provided citizens with a privacy and security statement at all (Figure 4-3). Cities such as Seoul, Sydney, Zurich, New York, and Hong Kong have clear privacy or security statements/ policies, as reflected through their overall rankings in the category.

[Figure 4-3] Existence of Privacy or Security Statement/Policy (2005)



5

USABILITY

The following chapter highlights the results for Usability. Results indicate that New York, Shanghai, Seoul, Sydney and Riga are top ranked cities in the category of Usability. New to the top five are New York, Sydney and Riga. New York was ranked 11th in 2003 with a score of 15.63, but has improved to first overall with a score of 19.06 in 2005. Sydney was ranked 34th in 2003 with a score of 12.19, but has improved to fourth overall with a score of 17.81 in 2005. Riga was ranked 51st in 2003 with a score of 10.00, but has improved to fifth overall with a score of 17.50 in 2005. Table 5-1 summarizes the results for all the municipalities evaluated in the category.

The average score in this category is 12.42, an increase from a score of 11.45 in 2003. One of the best practices in the category of Usability is New York, scoring 19.06. The websites for New York are very "user-friendly." For example, all pages use consistent color, formatting, "default colors" and underlined text to indicate links. There are consistent uses of navigation bars and links to the homepage on every page. The websites contain very advanced forms, allowing citizens to submit pertinent information.

[Table 5-1] Results in Usability (2005)

Ranking	City	Country	Score
1	New York	United States	**19.06**
2	Shanghai	China	**18.75**
3	Seoul	Republic of Korea	**17.81**
3	Sydney	Australia	**17.81**
5	Riga	Latvia	**17.50**
6	Oslo	Norway	**17.19**
7	Dublin	Ireland	**16.88**
7	Jerusalem	Israel	**16.88**
7	Prague	Czech Rep.	**16.88**
10	Hong Kong	Hong Kong	**16.25**
10	Stockholm	Sweden	**16.25**
10	Tokyo	Japan	**16.25**
13	Bratislava	Slovak Republic	**15.94**
13	Paris	France	**15.94**
13	Singapore	Singapore	**15.94**
16	Auckland	New Zealand	**15.63**
17	Kiev	Ukraine	**15.31**
17	Luxembourg city	Luxembourg	**15.31**
17	Warsaw	Poland	**15.31**
20	Budapest	Hungary	**15.00**
20	Copenhagen	Denmark	**15.00**
20	Moscow	Russia	**15.00**
23	Sao Paulo	Brazil	**14.69**
23	Zurich	Switzerland	**14.69**
25	Helsinki	Finland	**14.38**
25	Ho Chi Minh	VietNam	**14.38**
27	Quezon City	Philippines	**14.06**
27	Toronto	Canada	**14.06**
29	Belgrade	Serbia & Montenegro	**13.75**
29	Lisbon	Portugal	**13.75**
29	Tallinn	Estonia	**13.75**
32	Macao	Macao	**13.44**
32	Sofia	Bulgaria	**13.44**
34	Reykjavik	Iceland	**13.13**
34	Riyadh	Saudi Arabia	**13.13**
34	Bogota	Colombia	**13.13**
37	Santiago	Chile	**12.81**
38	Amsterdam	Netherlands	**12.50**
38	Minsk	Belarus	**12.50**

[Table 5-1] Results in Usability (Cont., 2005)

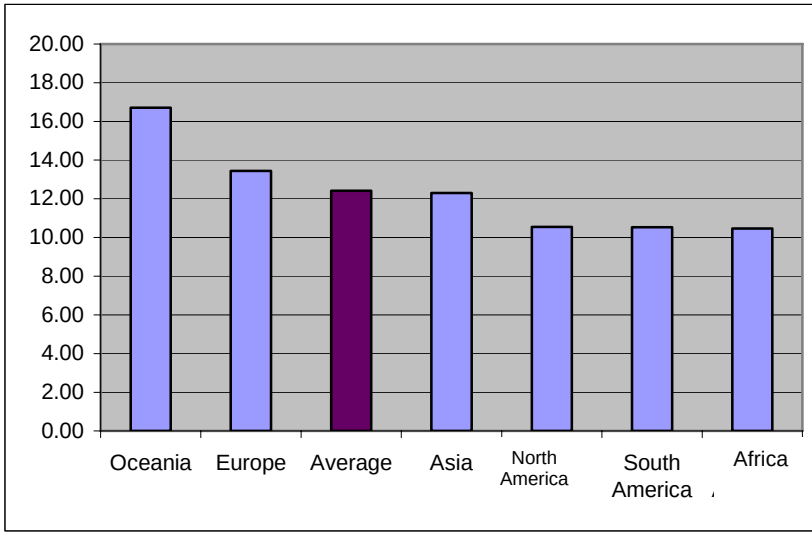
38	Rome	Italy	**12.50**
41	Brussels	Belgium	**12.29**
42	Caracas	Venezuela	**12.19**
42	Lagos	Nigeria	**12.19**
42	Nicosia	Cyprus	**12.19**
45	Amman	Jordan	**11.88**
45	Cairo	Egypt	**11.88**
45	Istanbul	Turkey	**11.88**
45	Jakarta	Indonesia	**11.88**
45	London	United Kingdom	**11.88**
45	Madrid	Spain	**11.88**
45	Vienna	Austria	**11.88**
52	Buenos Aires	Argentina	**11.56**
52	Cape Town	South Africa	**11.56**
52	Kuala Lumpur	Malaysia	**11.56**
55	Colombo	Sri Lanka	**11.25**
55	Ljubljana	Slovenia	**11.25**
57	Vilnius	Lithuania	**10.94**
58	Mumbai	India	**10.31**
58	Tegucigalpa	Honduras	**10.31**
60	Guayaquil	Ecuador	**10.00**
61	Bucharest	Romania	**9.69**
61	Dubai	U.A.E.	**9.69**
61	Mexico City	Mexico	**9.69**
61	Zagreb	Croatia	**9.69**
65	Athens	Greece	**9.38**
66	Beirut	Lebanon	**9.06**
66	Dhaka	Bangladesh	**9.06**
66	San Jose	Costa Rica	**9.06**
69	Berlin	Germany	**8.75**
69	Karachi	Pakistan	**8.75**
71	Guatemala City	Guatemala	**8.44**
71	Tehran	Iran	**8.44**
73	Bangkok	Thailand	**8.13**
74	Montevideo	Uruguay	**7.81**
75	Chisinau	Moldova, Rep. of	**7.52**
76	La Paz	Bolivia	**7.19**
76	San Salvador	El Salvador	**7.19**
78	Nairobi	Kenya	**6.56**
79	Panama City	Panama	**5.94**
80	Lima	Peru	**5.31**
81	Tashkent	Uzbekistan	**4.06**

Table 5-2 represents the average score in Usability. Overall, cities in Oceania scored 16.72, while cities in Africa scored 10.47 in this category. Oceania remained as the continent with the highest average in score, increasing from 14.53 in 2003. Africa replaced South America as the continent with the lowest average score. South America increased its score of 8.53 in 2003 to 10.52 in 2005. Table 5-2 also presents the data separated by OECD and Non-OECD member countries for the category of Usability. Cities in OECD countries scored an average of 14.30, while cities in non-member countries scored only 11.32 in this category. This result indicates that cities in economically advanced countries continue to have more emphasis on usability than do cities in less developed countries; however, the gap has slightly decreased from that in 2003. Figures 5-1 and 5-2 illustrate the data presented Table 5-2.

[Table 5-2] Average Score in Usability by Continent and OECD Member and Non-Member Countries (2005)

	Oceania	**Europe**	**Average**	**Asia**	**North America**	**South America**	**Africa**
OECD	16.72	13.94	14.30	15.31	-	-	14.27
Usability Averages	16.72	13.44	12.42	12.29	10.55	10.52	10.47
Non-OECD	-	12.53	11.32	11.86	10.55	10.52	8.19

[Figure 5-1] Average Score in Usability by Continent (2005)



[Figure 5-2] Average Score in Usability by OECD Member and Non-Member Countries (2005)

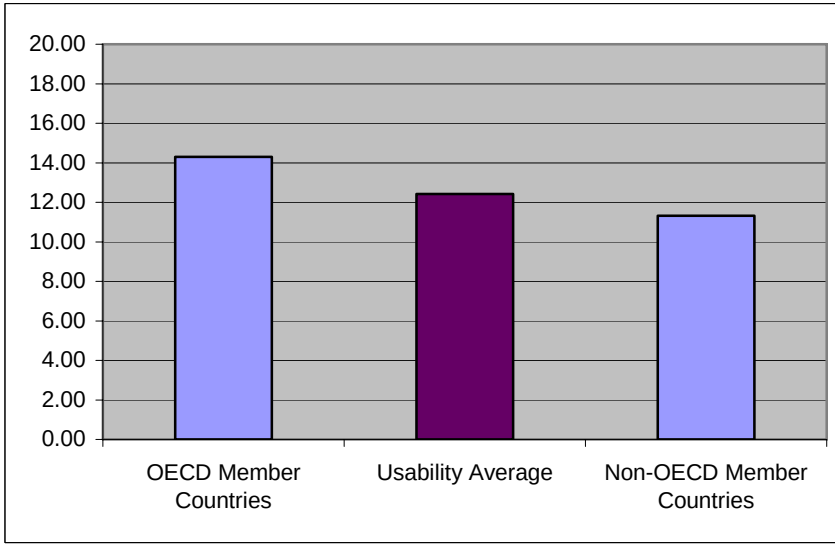


Table 5-3 lists the results of the evaluation of key aspects in the

category of Usability by continent. In terms of homepage length, with text size set to "medium" at the "view" menu of Internet Explorer on a 17 inch monitor, cities in Europe, North America, South America, and Oceania score above average, while cities in Asia and Africa are below average. That is, under the conditions above, many cities in Europe, North America, South America, and Oceania require two screens or less to view the main city homepage. Also, with regard to page length, about 68% of cities in Europe, 63% in North America and all cities evaluated in Oceania have alternative versions (e.g., doc or pdf) available for documents which are more than three to four screens long.

In addition, with respect to targeted audience links, 89% of cities in South America and 56% in Europe have the targeted audience links divided into more than three categories (e.g. general citizens, youths, the old, women, family, citizens in need of social welfare services, businesses, industry, small businesses, public employees, etc.), while no cities in Africa and South America have targeted audience links divided into more than three categories. This is a significant increase for South American cities, which for 2003 reported having 0% for the same measure. Also, as to a site map, with text size set to "medium" at the "view" menu of Internet Explorer on a 17 inch monitor, 62% in Europe and 56% in South America, have a sitemap containing active links and less than two screens in length, whereas no cities in Oceania have that kind of sitemap. Moreover, in terms of date of recent update of websites, about 76% of cities in Europe and 75% in Asia and North America had updated their websites within the past month or less, while only 50% in Oceania had updated websites that were one month or less old.

[Table 5-3] Results for Usability by Continent (2005)

	Oceania	Europe	Average	Asia	North America	South America	Africa
Homepage Length	100%	82%	81%	75%	88%	89%	75%
Page Length	100%	68%	62%	54%	63%	56%	50%
Targeted Audience	50%	56%	57%	50%	50%	89%	50%
Site map	0%	62%	49%	46%	25%	56%	25%
Recent update	50%	76%	75%	75%	75%	67%	75%

Table 5-4 indicates the results of assessments of usability among OECD and non-OECD countries. In terms of homepage length, about 77% of cities in OECD countries require two screens or less to view the main city homepage, while about 84% in non-OECD countries have a homepage requiring two screens or less to view. This is one of the few areas in which non-OECD member countries exceed the performance of OECD member countries. Also, with regard to page length, about 80% of cities in OECD countries have alternative versions available for long documents which are more than three to four screens long, whereas only about 51% of cities in non-OECD countries have those alternative versions.

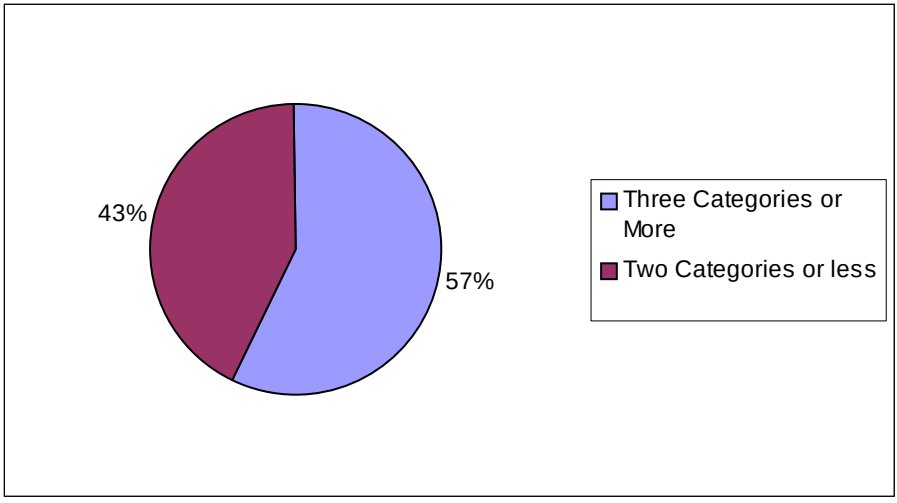
With respect to targeted audience links, about 63% of cities in OECD countries have links divided into more than three categories, while only 53% of non-OECD countries have such links. As to site map, about 57% of cities throughout the world have a sitemap containing active links and less than two screens in length. Moreover, in terms of date of recent update of websites, about 83% of cities in OECD countries had updated their websites in the past month, while only 71% in non-OECD countries had accomplished such updates.

[Table 5-4] Results for Usability by OECD Member and Non-Member Countries (2005)

	OECD	Average	Non-OECD
Homepage	77%	81%	84%
Page Length	80%	62%	51%
Targeted Audience	63%	57%	53%
Site map	57%	49%	45%
Date of Recent update	83%	75%	71%

With regard to "Targeted audience links: Are targeted audience links available on the homepage? (e.g. general citizens, youths, the old, women, family, citizens in need of social welfare services, businesses, industry, small businesses, public employees, etc.)," 57% of municipal websites are divided into more than three categories, representing 66 cities (Figure 5-3).

[Figure 5-3] Targeted Audience Links (2005)



6

CONTENT

Results for Content indicate that Seoul, New York, Tallinn, Zurich, Hong Kong, and Riga are top ranked cities in the category of Content. New to the top five are Tallinn, Zurich and Riga. Tallinn was ranked 6th in 2003 with a score of 12.55, but has improved to third overall with a score of 14.79 in 2005. Zurich was ranked 28th in 2003 with a score of 7.66, but has improved to fourth overall with a score of 13.96 in 2005. Riga was ranked 51st in 2003 with a score of 4.26, but has improved to fifth overall with a score of 13.75 in 2005. Table 6-1 summarizes the results for all the municipalities evaluated in the Content category.

The average score for the top five cities has only slightly increased from 2003. The average score for the top five ranked cities in 2005 is 14.66, while the average score for the top five ranked cities in 2003 was 14.08. However the overall average increase for this category is second largest of the five categories. The average score in this category is 7.63, an increase from a score of 6.43 in 2003.

[Table 6-1] Results in Content (2005)

Ranking	City	Country	Score
1	Seoul	Republic of Korea	**16.04**
2	New York	United States	**14.79**
2	Tallinn	Estonia	**14.79**
4	Zurich	Switzerland	**13.96**
5	Hong Kong	Hong Kong	**13.75**
5	Riga	Latvia	**13.75**
7	Reykjavik	Iceland	**13.54**
7	Warsaw	Poland	**13.54**
9	Macao	Macao	**13.13**
9	Shanghai	China	**13.13**
11	Sydney	Australia	**12.50**
12	Tokyo	Japan	**12.29**
13	Cape Town	South Africa	**11.88**
13	Luxembourg city	Luxembourg	**11.88**
15	Singapore	Singapore	**11.67**
15	Sofia	Bulgaria	**11.67**
17	Paris	France	**11.46**
17	Toronto	Canada	**11.46**
19	Bratislava	Slovak Republic	**11.04**
19	Budapest	Hungary	**11.04**
19	Dublin	Ireland	**11.04**
22	Brussels	Belgium	**10.83**
22	Jakarta	Indonesia	**10.83**
24	Stockholm	Sweden	**10.63**
25	Vilnius	Lithuania	**10.42**
26	Prague	Czech Rep.	**10.21**
27	Helsinki	Finland	**10.00**
27	Oslo	Norway	**10.00**
29	Amsterdam	Netherlands	**9.79**
30	Jerusalem	Israel	**9.58**
30	Copenhagen	Denmark	**9.58**
32	London	United Kingdom	**9.17**
33	Istanbul	Turkey	**8.96**
33	Lisbon	Portugal	**8.96**
35	Berlin	Germany	**8.54**
36	Cairo	Egypt	**8.33**
36	Ho Chi Minh	VietNam	**8.33**
36	Sao Paulo	Brazil	**8.33**
39	Tegucigalpa	Honduras	**8.13**

[Table 6-1] Results in Content (Cont., 2005)

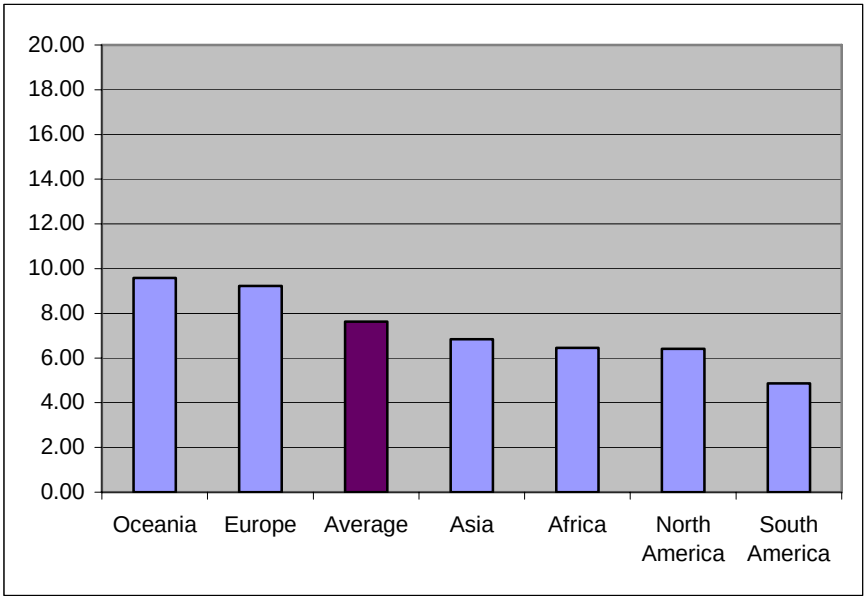
40	Moscow	Russia	**7.71**
40	Rome	Italy	**7.71**
42	Athens	Greece	**6.88**
43	Auckland	New Zealand	**6.67**
43	Kiev	Ukraine	**6.67**
43	Santiago	Chile	**6.67**
46	Belgrade	Serbia & Montenegro	**6.46**
46	Minsk	Belarus	**6.46**
48	Vienna	Austria	**6.25**
49	Ljubljana	Slovenia	**6.04**
50	Buenos Aires	Argentina	**5.83**
51	Lima	Peru	**5.42**
52	Karachi	Pakistan	**5.00**
52	Riyadh	Saudi Arabia	**5.00**
54	Bucharest	Romania	**4.79**
54	Nicosia	Cyprus	**4.79**
56	San Jose	Costa Rica	**4.58**
56	Bogota	Colombia	**4.58**
58	Dubai	U.A.E.	**4.38**
58	Guayaquil	Ecuador	**4.38**
58	Mumbai	India	**4.38**
61	Bangkok	Thailand	**4.17**
62	Kuala Lumpur	Malaysia	**3.96**
62	La Paz	Bolivia	**3.96**
64	Chisinau	Moldova, Rep. of	**3.75**
64	Madrid	Spain	**3.75**
64	Mexico City	Mexico	**3.75**
64	Panama City	Panama	**3.75**
64	Quezon City	Philippines	**3.75**
69	San Salvador	El Salvador	**3.54**
69	Lagos	Nigeria	**3.54**
71	Beirut	Lebanon	**3.13**
72	Caracas	Venezuela	**2.50**
72	Dhaka	Bangladesh	**2.50**
74	Colombo	Sri Lanka	**2.29**
75	Montevideo	Uruguay	**2.08**
75	Nairobi	Kenya	**2.08**
77	Amman	Jordan	**1.67**
77	Zagreb	Croatia	**1.67**
79	Guatemala City	Guatemala	**1.25**
80	Tehran	Iran	**1.04**
81	Tashkent	Uzbekistan	**0.42**

Table 6-2 represents the average score in Content by continent. Overall, cities in Oceania scored 9.58, while cities in South America scored only 4.86 in this category. Oceania remained as the continent with the highest average score, a slight decrease from 10.11 in 2003. South America remained as the continent with the lowest average score. Africa increased its score of 4.36 in 2003 to a score of 6.46 in 2005. Table 6-2 also presents the data separated by OECD and non-OECD member countries for the category of Content. Cities in OECD countries scored an average of 10.21, while cities in non-member countries scored only 6.12 in this category. This result indicates that cities in economically advanced countries continue to have more emphasis on website content than do cities in less developed countries. Figures 6-1 and 6-2 illustrate the data presented Table 6-2.

[Table 6-2] Average Score in Content by Continent and OECD Member and Non-Member Countries (2005)

	Oceania	Europe	Average	Asia	Africa	North America	South America
OECD	9.58	9.99	10.21	12.43	-	10.00	-
Content Averages	9.58	9.23	7.63	6.84	6.46	6.41	4.86
Non-OECD	-	7.85	6.12	6.04	6.46	4.25	4.86

[Figure 6-1] Average Score in Content by Continent (2005)



[Figure 6-2] Average Score in Content by OECD Member and Non-Member Countries (2005)

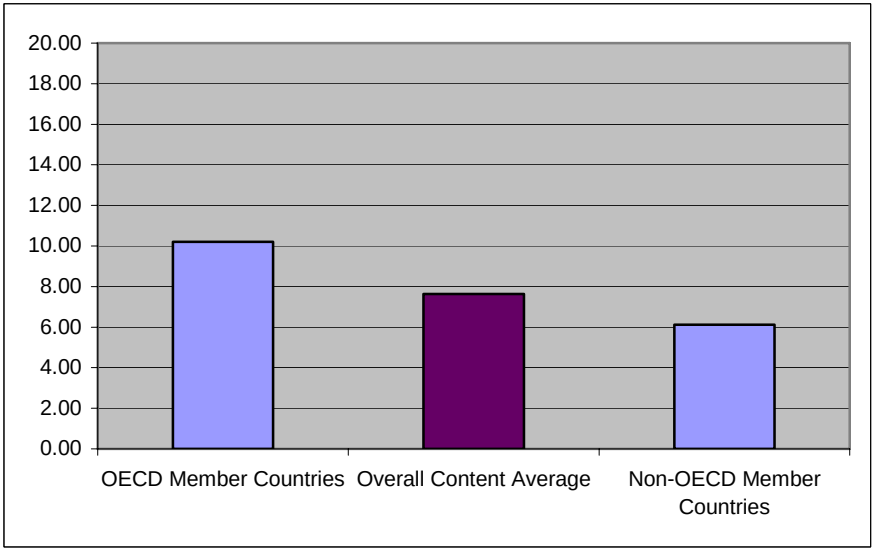


Table 6-3 indicates the results of evaluation of Content by continent. More than 30% of cities evaluated in all continents, except South America, have websites with mechanisms in the area of emergency management or alert mechanisms (severe weather, etc.). Also, with regard to disability access for the blind, only about 10% of cites have websites providing such access (e.g. Bobby compliant: http://www.cast.org/bobby). Asian cities had the highest percentage of municipal websites with that feature. In addition, only 9% of cities have websites providing disability access for the deaf (TDD phone service). Cities in the continents of Oceania, South America, and Africa have no websites providing disability access for the deaf.

With respect to the use of wireless technology, 29% of cities in Europe and 25% in Asia and Africa have websites using wireless technology, such as messages to a mobile phone, PDA (Personal Digital Assistant) or a Palm Pilot to update applications, events etc. No cities in North America and Oceania, however, have websites using this technology. In addition, more than half of cities in Asia, Europe, and Oceania have websites offering access in more than one language. This finding is similar to that of 2003; however, the overall average for websites offering access in more than one language has increased to 65% from 45% in 2003.

[Table 6-3] Results for Content by Continent (2005)

	Oceania	**Europe**	**Average**	**Asia**	**North America**	**South America**	**Africa**
Emergency Management	50%	32%	40%	50%	50%	22%	50%
Access for the Blind	0%	12%	10%	17%	0%	0%	0%
Access for the deaf	0%	9%	9%	13%	13%	0%	0%
Wireless technology	0%	29%	22%	25%	0%	11%	25%
More than one language	100%	82%	65%	79%	25%	22%	25%

Table 6-4 indicates the results of assessments of Content among OECD and non-OECD countries. Like the other categories discussed above, cities in OECD countries have more advanced websites in terms of content than do cities in non-OECD countries. As to an emergency management or an alert mechanism, however, the 40% of cities in non-OECD countries have such websites, with the same results for OECD member countries. Yet this is not reflective of performance improvement for non-OECD member countries. In 2003, OECD member countries had a significantly lower score than those of non-OECD member countries.

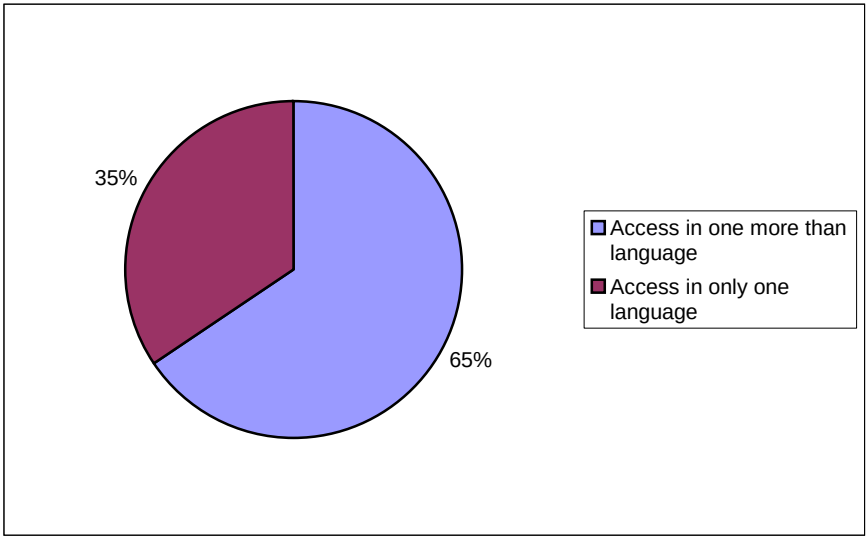
With regard to disability access for the blind, about 20% of cites in OECD countries have websites providing such access, whereas only 4% of cities in non-OECD countries have that capacity. In addition, about 17% of cities in OECD countries have websites providing disability access for the deaf, while only 4% of cities in non-OECD countries offer it. With respect to the use of wireless technology, about 37% of cities in OECD countries have websites using wireless technology to update applications, events etc. Even fewer cities, about 14% in non-OECD countries, have websites using that technology. In addition, about 83% of cities in OECD countries have websites offering access in more than one language, while only 55% in non-OECD countries offer multi-lingual access.

[Table 6-4] Results for Content by OECD Member and Non-Member Countries (2005)

	OECD	Average	Non-OECD
Emergency Management	40%	40%	40%
Access for the blind	20%	10%	4%
Access for the deaf	17%	9%	4%
Use of wireless technology	37%	22%	14%
More than one language	83%	65%	55%

Furthermore, in respect to the question “Does the site offer access in more than one language?,” 53 cities of those evaluated have a website that offers access in more than one language, while only 28 cities have no such access. Figure 6-3 represents these findings in terms of overall percentages.

[Figure 6-3] Access in multiple languages (2005)



7

SERVICES

The following chapter highlights the results for online Services. Results indicate that Seoul, New York, Singapore, Hong Kong, and Warsaw are the top ranked cities in the category of online Services. New to the top five are New York and Warsaw. New York was ranked sixth in 2003 with a score of 1.93, but has improved to second overall with a score of 15.76 in 2005. Warsaw was ranked 62nd in 2003 with a score of 1.93, but has improved to fifth overall with a score of 11.86 in 2005. Table 7-1 summarizes the results for all the municipalities evaluated in this category.

The average score in this category is 5.32, an increase from a score of 4.82 in 2003. Only two cities evaluated earned 0 points in this category, a decrease from the three municipalities that earned 0 points in 2003. The average score for the top five ranked cities in 2005 is 14.51, while the average score for the top five ranked cities in 2003 was 13.69.

[Table 7-1] Results in Service (2005)

Ranking	City	Country	Score
1	Seoul	Republic of Korea	**16.61**
2	New York	United States	**15.76**
3	Singapore	Singapore	**14.58**
4	Hong Kong	Hong Kong	**13.73**
5	Warsaw	Poland	**11.86**
6	Shanghai	China	**11.69**
7	Tokyo	Japan	**10.34**
7	Reykjavik	Iceland	**10.34**
9	Prague	Czech Rep.	**10.00**
10	Toronto	Canada	**9.83**
11	Sao Paulo	Brazil	**9.66**
12	Oslo	Norway	**9.49**
12	Zurich	Switzerland	**9.49**
14	Ho Chi Minh	VietNam	**8.98**
14	Sydney	Australia	**8.98**
16	Berlin	Germany	**8.64**
17	Buenos Aires	Argentina	**7.80**
18	Rome	Italy	**7.63**
19	Tallinn	Estonia	**7.46**
19	Sofia	Bulgaria	**7.46**
21	Luxembourg city	Luxembourg	**7.29**
22	Bangkok	Thailand	**6.95**
22	Cape Town	South Africa	**6.95**
24	London	United Kingdom	**6.78**
25	Budapest	Hungary	**6.61**
25	Helsinki	Finland	**6.61**
27	Riga	Latvia	**6.44**
28	Auckland	New Zealand	**6.10**
28	Copenhagen	Denmark	**6.10**
28	Vilnius	Lithuania	**6.10**
31	Amsterdam	Netherlands	**5.93**
31	Dubai	U.A.E.	**5.93**
33	Bratislava	Slovak Republic	**5.76**
33	Moscow	Russia	**5.76**
35	Istanbul	Turkey	**5.59**
35	Stockholm	Sweden	**5.59**
37	Macao	Macao	**5.42**
38	Lisbon	Portugal	**5.08**
39	Brussels	Belgium	**4.97**

[Table 7-1] Results in Content (Cont., 2005)

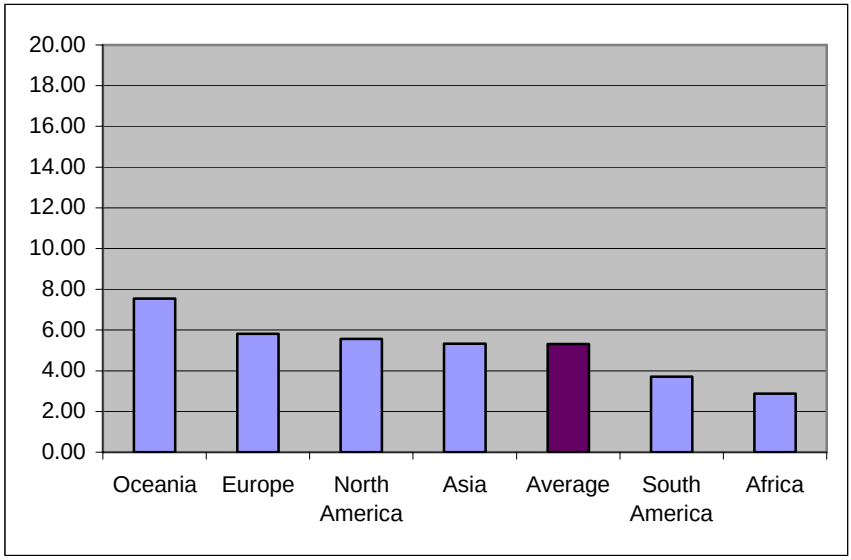
40	Belgrade	Serbia & Montenegro	**4.92**
40	Dublin	Ireland	**4.92**
42	Mexico City	Mexico	**4.75**
42	Paris	France	**4.75**
42	Santiago	Chile	**4.75**
45	Quezon City	Philippines	**3.90**
46	Ljubljana	Slovenia	**3.73**
46	Madrid	Spain	**3.73**
46	San Jose	Costa Rica	**3.73**
49	Kuala Lumpur	Malaysia	**3.56**
49	Athens	Greece	**3.56**
51	Karachi	Pakistan	**3.22**
51	Minsk	Belarus	**3.22**
53	Guatemala City	Guatemala	**3.05**
53	La Paz	Bolivia	**3.05**
53	Tehran	Iran	**3.05**
56	Panama City	Panama	**2.88**
57	Kiev	Ukraine	**2.54**
57	Nicosia	Cyprus	**2.54**
57	Bucharest	Romania	**2.54**
57	San Salvador	El Salvador	**2.54**
57	Bogota	Colombia	**2.54**
62	Cairo	Egypt	**2.37**
63	Jakarta	Indonesia	**2.20**
63	Lagos	Nigeria	**2.20**
63	Jerusalem	Israel	**2.20**
66	Tegucigalpa	Honduras	**2.03**
67	Lima	Peru	**1.86**
67	Vienna	Austria	**1.86**
69	Mumbai	India	**1.69**
70	Montevideo	Uruguay	**1.53**
71	Beirut	Lebanon	**1.36**
71	Caracas	Venezuela	**1.36**
71	Riyadh	Saudi Arabia	**1.36**
74	Colombo	Sri Lanka	**1.19**
74	Dhaka	Bangladesh	**1.19**
76	Guayaquil	Ecuador	**0.85**
77	Amman	Jordan	**0.68**
78	Chisinau	Moldova, Rep. of	**0.51**
79	Zagreb	Croatia	**0.34**
80	Nairobi	Kenya	**0.00**
80	Tashkent	Uzbekistan	**0.00**

Table 7-2 represents the average score of online Services by continent. Overall, cities in Oceania scored 7.54, while cities in Africa scored only 2.88 in this category. Oceania remained as the continent with the highest average score, decreasing slightly from a score of 7.89 in 2003. Africa replaced South America as the continent with the lowest average score. Table 7-2 also presents the data separated by OECD and Non-OECD member countries for the category of online Services. Cities in OECD countries scored an average of 7.50, while cities in non-member countries scored only 4.03 in this category. This result indicates that cities in developed countries have provided citizens with more online Services than have cities in less developed countries. Figures 7-1 and 7-2 illustrate the data presented in Table 7-2.

[Table 7-2] Average Score in Services by Continent and OECD Member and Non-Member Countries (2005)

	Oceania	**Europe**	**North America**	**Asia**	**Average**	**South America**	**Africa**
OECD	7.54	6.68	10.11	10.85	7.50	-	-
Services Averages	7.54	5.82	5.57	5.33	5.32	3.71	2.88
Non-OECD	-	4.25	2.85	4.54	4.03	3.71	2.88

[Figure 7-1] Average Score in Services by Continent (2005)



[Figure 7-2] Average Score in Services by OECD Member and Non-Member Countries (2005)

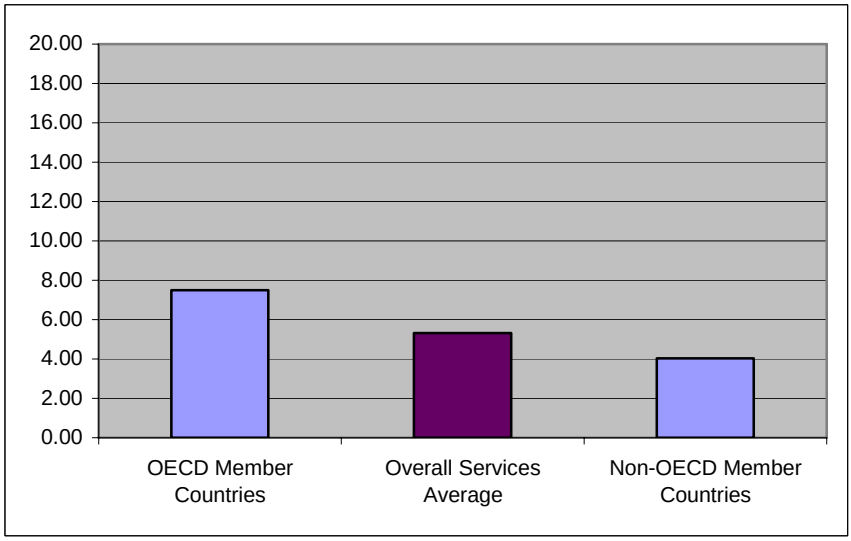


Table 7-3 indicates the results of key aspects selected in the category of Service delivery by continent. With regard to searchable databases, over 60% of cities in Europe and North America have websites offering a searchable database, while only 33% of cities evaluated in South America have sites offering that capacity. In terms of portal customization, 13% of cities in North America and about 11% in South America allow users to customize the main city homepage, depending on their needs. In addition, with respect to access to private information online (e.g. educational records, medical records, point total of driving violations, lost pet dogs, lost property), 50% of cities Oceania, 38% in North America and 33% in South America allow users to access private information online, while no cities in Africa allow citizens to do so.

[Table 7-3] Results for Services by Continent (2005)

	Oceania	Europe	Average	Asia	North America	South America	Africa
Searchable Database	50%	82%	60%	42%	63%	33%	50%
Portal Customization	0%	9%	7%	4%	13%	11%	0%
Access to Private Info	50%	21%	23%	21%	38%	33%	0%

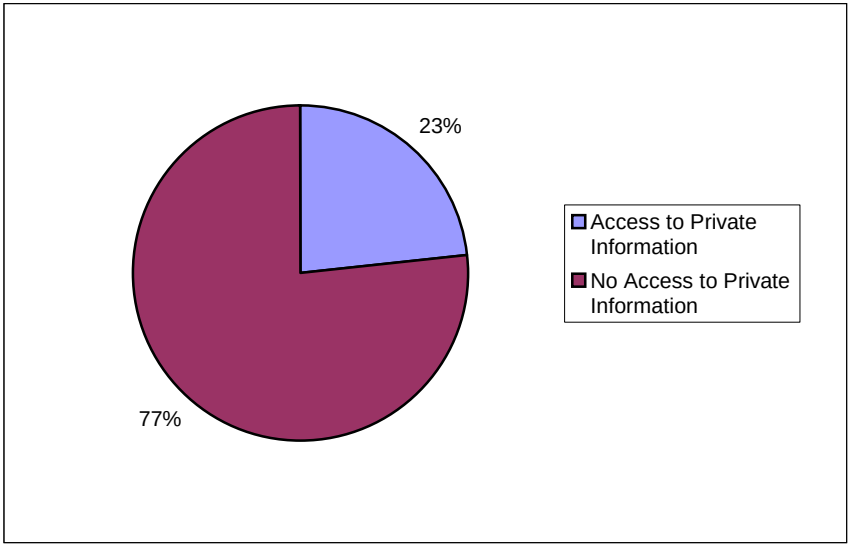
Table 7-4 represents the results of key aspects selected in the category of service delivery by OECD membership. With regard to searchable databases, about 90% of cities in OECD countries have websites offering a searchable database, and about 43% in non-OECD countries have sites offering that capacity. In terms of portal customization, about 6.6% of cities in OECD countries allow users to customize the main city homepage depending on their needs, and about 7.8% in non-OECD countries allow citizens to do so. This is the second such instance in which non-OECD member countries perform better than OECD member countries (pg 61). In addition, with respect to access to private information online, 33% of cities in OECD countries allow users to access such information, while 18% of cities in non-OECD countries allow citizens to do so.

[Table 7-4] Results for Services by OECD Member and Non-Member Countries (2005)

	OECD	Average	Non-OECD
Searchable Database	90%	60%	43%
Portal Customization	6.6%	7.4%	7.8%
Access Private Info	33%	23%	18%

Nineteen cities (23%) do allow access to private information online in response to the question "Does the site allow access to private information online (e.g. educational records, medical records, point total of driving violations, lost pet dogs, lost property)?" Over 70% of cities do not allow such access. Figure 7-3 illustrates this finding.

[Figure 7-3] Access to Private Information Online (2005)



8

CITIZEN PARTICIPATION

The following chapter highlights the results for Citizen Participation. Results indicate that Seoul, Warsaw, Bratislava, London, and Prague are top ranked cities in the category of Privacy and Security. New to the top five are all of those cities except Seoul, which repeats as the top ranked city in the category. Warsaw was ranked 74th in 2003 with a score of 0.00, but has improved to second overall with a score of 12.55 in 2005. Bratislava was not ranked in 2003, but has received a third overall ranking with a score of 10.91 in 2005. London was ranked 51st in 2003 with a score of 1.54, but has improved to fourth overall with a score of 10.55 in 2005. Prague was not ranked in 2003 but has received a fifth overall ranking with a score of 10.18 in 2005. Table 8-1 summarizes the results for all the municipalities evaluated in this category.

The average score in this category is 3.57, an increase from a score of 3.26 in 2003. The category of Citizen Participation resulted in the smallest overall increase in performance. This can be attributed in part to the additional questions added to the survey instrument to better survey citizen participation online. However, the results can also be attributed, in part, to the lack of support for such online practices.

[Table 8-1] Results in Citizen Participation (2005)

Ranking	City	Country	Score
1	Seoul	Republic of Korea	**13.64**
2	Warsaw	Poland	**12.55**
3	Bratislava	Slovak Republic	**10.91**
4	London	United Kingdom	**10.55**
5	Prague	Czech Rep.	**10.18**
6	Riga	Latvia	**9.45**
7	Sofia	Bulgaria	**8.55**
7	Toronto	Canada	**8.55**
9	Shanghai	China	**8.36**
10	Tokyo	Japan	**8.36**
11	Amsterdam	Netherlands	**7.82**
12	Singapore	Singapore	**7.64**
13	New York	United States	**7.09**
14	Tegucigalpa	Honduras	**6.73**
15	Budapest	Hungary	**6.55**
16	Bangkok	Thailand	**5.64**
17	Jakarta	Indonesia	**5.45**
18	Cape Town	South Africa	**5.09**
19	Belgrade	Serbia & Montenegro	**4.91**
19	Luxembourg city	Luxembourg	**4.91**
21	Minsk	Belarus	**4.73**
21	Sydney	Australia	**4.73**
23	Moscow	Russia	**4.55**
23	Paris	France	**4.55**
25	Brussels	Belgium	**4.36**
25	Istanbul	Turkey	**4.36**
25	Jerusalem	Israel	**4.36**
28	Kiev	Ukraine	**4.18**
29	Berlin	Germany	**3.82**
29	Tallinn	Estonia	**3.82**
29	Stockholm	Sweden	**3.82**
32	Reykjavik	Iceland	**3.64**
32	Helsinki	Finland	**3.64**
34	Auckland	New Zealand	**3.45**
34	Ho Chi Minh	VietNam	**3.45**
36	Athens	Greece	**3.27**
36	Dublin	Ireland	**3.27**
38	Beirut	Lebanon	**3.09**
38	Macao	Macao	**3.09**

[Table 8-1] Results in Citizen Participation (Cont., 2005)

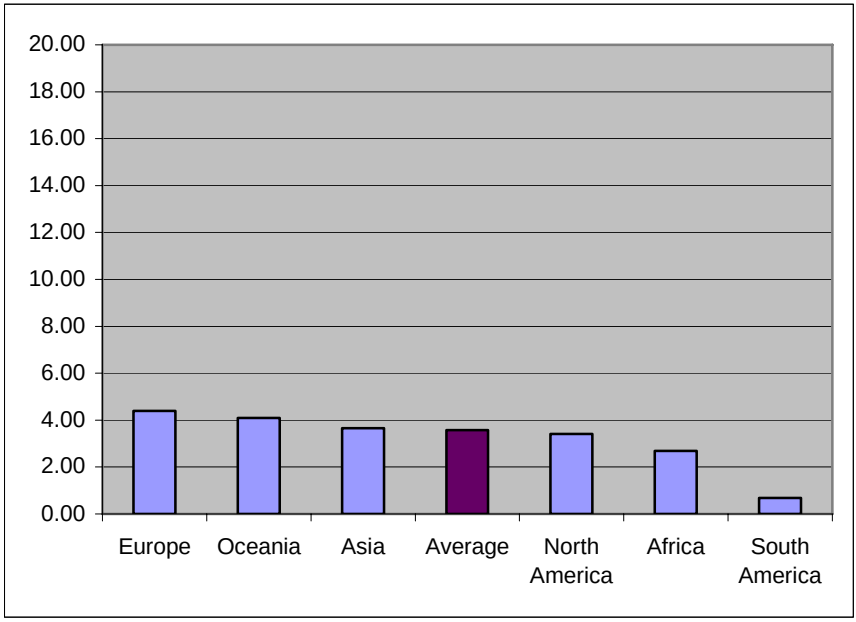
40	Cairo	Egypt	**2.91**
41	Dubai	U.A.E.	**2.73**
41	Vilnius	Lithuania	**2.73**
43	Lagos	Nigeria	**2.55**
43	Amman	Jordan	**2.55**
43	Oslo	Norway	**2.55**
46	Hong Kong	Hong Kong	**2.18**
46	Karachi	Pakistan	**2.18**
46	San Jose	Costa Rica	**2.18**
49	Riyadh	Saudi Arabia	**2.00**
49	Sao Paulo	Brazil	**2.00**
51	Nicosia	Cyprus	**1.64**
51	Rome	Italy	**1.64**
51	San Salvador	El Salvador	**1.64**
51	Colombo	Sri Lanka	**1.64**
55	Buenos Aires	Argentina	**1.45**
55	Copenhagen	Denmark	**1.45**
55	Dhaka	Bangladesh	**1.45**
55	Vienna	Austria	**1.45**
55	Zurich	Switzerland	**1.45**
60	Lisbon	Portugal	**1.27**
60	Quezon City	Philippines	**1.27**
60	Kuala Lumpur	Malaysia	**1.27**
63	Bucharest	Romania	**1.09**
63	Lima	Peru	**1.09**
63	Madrid	Spain	**1.09**
66	Mumbai	India	**0.91**
67	La Paz	Bolivia	**0.55**
67	Panama City	Panama	**0.55**
67	Bogota	Colombia	**0.55**
70	Chisinau	Moldova, Rep. of	**0.36**
70	Mexico City	Mexico	**0.36**
70	Montevideo	Uruguay	**0.36**
70	Tehran	Iran	**0.36**
74	Guatemala City	Guatemala	**0.18**
74	Guayaquil	Ecuador	**0.18**
74	Ljubljana	Slovenia	**0.18**
74	Nairobi	Kenya	**0.18**
78	Caracas	Venezuela	**0.00**
78	Santiago	Chile	**0.00**
78	Tashkent	Uzbekistan	**0.00**
78	Zagreb	Croatia	**0.00**

Table 8-2 represents the average score in Citizen Participation by continent. Overall, cities in Europe ranked the highest among the continents with a score of 4.39, while cities in South America scored only 0.69 in this category. Oceania was replaced by Europe as the continent with the highest average. South America replaced Africa as the continent with lowest average score. Africa increased its score of 1.41 in 2003 to a score of 2.68 in 2005. Table 8-2 also presents the data separated by OECD and Non-OECD member countries for the category of Citizen Participation. Cities in OECD countries scored an average of 5.18, while cities in non-member countries scored only 2.63 in this category. This result indicates that cities in economically advanced countries continue to have more emphasis on citizen participation than do cities in less developed countries. Figures 8-1 and 8-2 illustrate the data presented Table 8-2.

[Table 8-2] Average Score in Citizen Participation by Continent and OECD Member and Non-Member Countries (2005)

	Europe	Oceania	Asia	Average	North America	Africa	South America
OECD	4.76	4.09	8.79	5.18	5.33	-	-
Citizen Participation	4.39	4.09	3.65	3.57	3.41	2.68	0.69
Non-OECD	3.71	-	2.92	2.63	2.25	2.68	0.69

[Figure 8-1] Average Score in Citizen Participation by Continent (2005)



[Figure 8-2] Average Score in Citizen Participation by OECD Member and Non-Member Countries (2005)

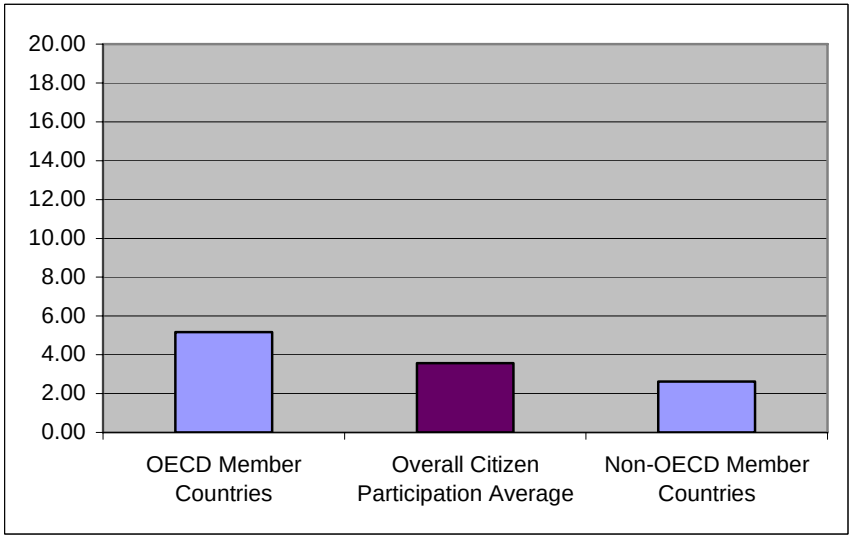


Table 8-3 indicates the results of key aspects selected for the category of Citizen Participation by continent. In terms of the evaluation of "Does the website allow users to provide comments or feedback to individual departments/agencies through online forms?," 31% of municipalities provide a mechanism allowing comments or feedback through online forms. Fifty percent of cities in Oceania and Africa provide such an online feedback form. With respect to online bulletin board or chat capabilities for gathering citizen input on public issues ("Online bulletin board" or "chat capabilities" means the city website where any citizens can post ideas, comments, or opinions without specific discussion topics.), over 32% do have these capabilities. Over 38% of cities in Oceania and 25% of cities in Asia provide online bulletin board or chat capabilities. With regard to online discussion forums on policy issues ("Online discussion forum" means the city websites where the city arranges public consultation on policy issues and citizens participate in discussing those specific topics.), 25% of municipalities evaluated do have a site containing an online discussion forum. In addition, the results of citywide performance measurement systems are provided by only 10% of municipal websites evaluated. North American and African cities lead the way with 25% of their cities currently offering such services. Figure 8-3 illustrates the overall presence online of performance measurement cities.

[Table 8-3] Results for Citizen Participation by Continent (2005)

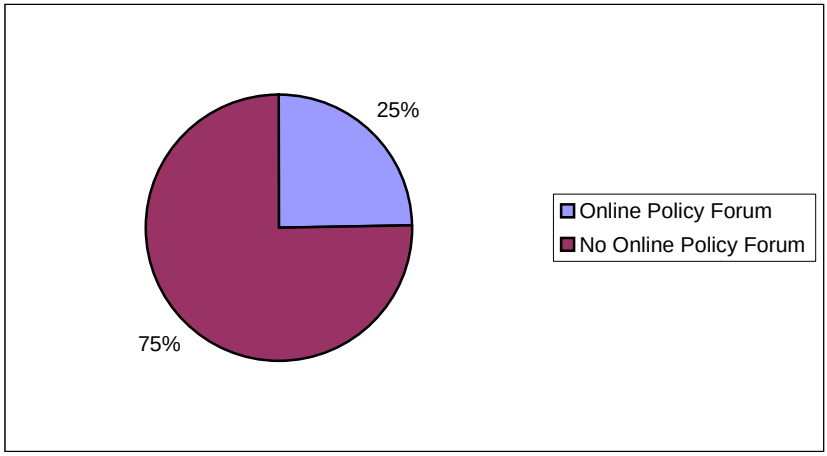
	Oceania	Europe	Average	Asia	North America	South America	Africa
Feedback Form	50%	44%	31%	29%	0%	0%	50%
Bulletin Board	0%	44%	32%	42%	13%	0%	0%
Policy Forum	0%	38%	25%	25%	13%	0%	0%
Performance Measurement	0%	9%	10%	8%	25%	0%	25%

Table 8-4 represents the results of key aspects selected in the category of Citizen Participation by OECD membership. In terms of the evaluation of "Does the website allow users to provide comments or feedback to individual departments/agencies through online forms?," 47% of municipalities in OECD countries provide a mechanism allowing comments or feedback through online forms. About 22% of municipalities in non-OECD countries provide a mechanism allowing comments or feedback through online forms. With respect to online bulletin board or chat capabilities for gathering citizen input on public issues, 37% of municipalities in OECD countries provide online bulletin board or chat capabilities. Only 29% of municipalities in non-OECD countries provide online bulletin board or chat capabilities. With regard to online discussion forums on policy issues, 37% of municipalities in OECD countries have a site containing an online discussion forum. Only 18% of municipalities in non-OECD countries, however, have a site containing an online discussion forum. The results of citywide performance measurement systems are provided by 20% of municipalities in OECD countries, while only 4% of municipalities in non-OECD countries have performance measurement systems online. Figure 8-3 illustrates the overall presence of online policy forums.

[Table 8-4] Results for Citizen Participation by OECD Member and Non-Member Countries (2005)

	OECD	Average	Non-OECD
Feedback Form	47%	31%	22%
Bulletin Board	37%	32%	29%
Policy Forum	37%	25%	18%
Performance Measurement	20%	10%	4%

[Figure 8-3] Online Policy Forums (2005)



9

BEST PRACTICES

SEOUL, REPUBLIC OF KOREA

Overall, Seoul has been ranked #1 in this evaluation, just as it was in the 2003 evaluation. Seoul has a well developed website in all five e-governance categories. In particular, it was the top ranked city in the areas of Privacy/Security, Content, Service and Citizen Participation. Seoul's Cyber Policy Forum, established in 2003, is representative of the municpality's efforts towrard enhancing online citizen particpation. The Cyber Policy Forum aims to, "provide citizens with opportunities to understand policy issues and to facilitate discussions; to encourage citizen participation in public administration and to obtain feedback about policy issues; and to reflect citizens' opinions in city policies and produce more tailored policy solutions for citizens." So it is no surprise that Seoul's performance in the area of Citizen Participation remains as the top ranked among all municipal websites evaluated. As Table 9-1 indicates, Seoul increased in its score for every e-governance category except Citizen Participation. This is a reflection of the additional survey questions for the category rather than a reduction in functions. Seoul provides citizens with opportunities to participate in governmental processes, including well-organized and systematic opportunities to submit their ideas and suggestions on proposed policies via policy forums in which citizens can freely suggest policy ideas and agendas to public servants (Figure 9-1). It is important to note that the gap in the overall score between Seoul and the second ranked city increased in 2005 compared to 2003.

[Table 9-1] Average Scores for Seoul, Korea in 2005 and 2003

Year	Score	Privacy	Usability	Content	Service	Participation
2005	**81.70**	17.60	17.81	16.04	16.61	13.64
2003	**73.48**	11.07	17.50	13.83	15.44	15.64

[Figure 9-1] Seoul, Republic of Korea Cyber Policy Forum

Accessed on March 21, 2006 at http://forum.seoul.go.kr/

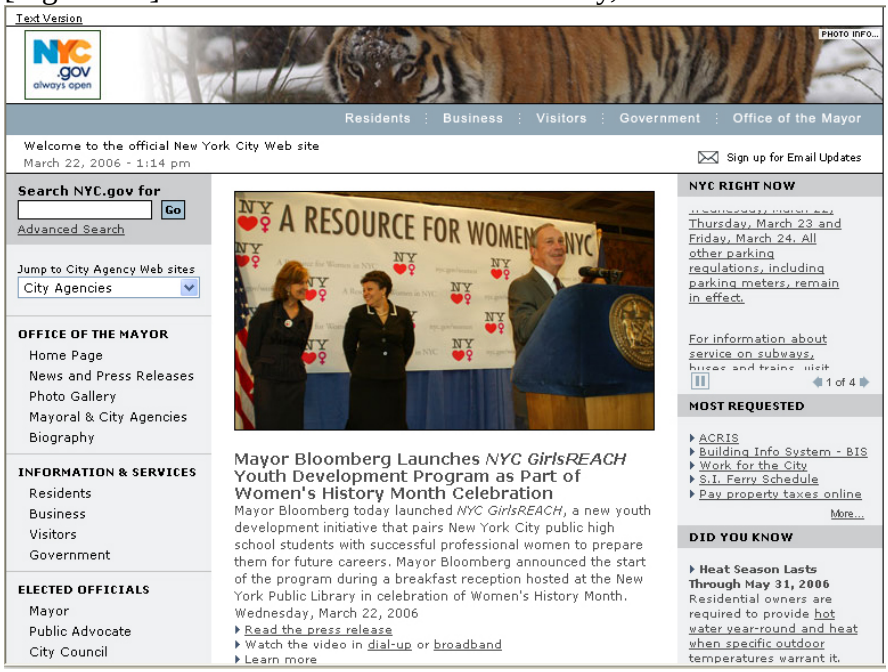
NEW YORK CITY, UNITED STATES

New York City increased in its overall score and its ranking from those in 2003. New York City was ranked fourth or higher in the areas of Privacy/Security, Usability, Content and Service. As indicated by Table 9-2 New York City improved in its score for all the above-mentioned categories. New York City was the top ranked municipality in the area of Usability, having a website design that offers user-friendly functions such as a sitemap, expanded search capabilities and pages intended for targeted audiences. In addition, New York City continues to provide a very thorough page with information about privacy and security, earning a top five ranking in this category for 2005.

[Table 9-2] Average Scores for New York City, United States in 2005 and 2003

Year	Score	Privacy	Usability	Content	Service	Participation
2005	**72.71**	16.00	19.06	14.79	15.76	7.09
2003	**61.35**	11.07	15.63	14.68	12.28	7.69

[Figure 9-2] Official Website of New York City, United States



Accessed on March 22, 2006 at http://www.nyc.gov

SHANGHAI, CHINA

The inclusion of Shanghai as the third best practice for the 2005 report is based on its third place ranking in the 2005 evaluation. Shanghai received an overall score of 63.93. The high score for Shanghai's website is not necessarily based on its best performance in any one category, but rather a reflection of its balanced performance throughout all five categories. Shanghai was also highly ranked in 2003, fifth overall. Table 9-3 highlights the comparison in scores by category from 2003 and 2005. As it did in 2003, Shanghai's website ranked tenth or better in all five categories. Figure 9-3 represents the official website of Shanghai.

[Table 9-3] Average Scores for Shanghai, China in 2005 and 2003

Year	Score	Privacy	Usability	Content	Service	Participation
2005	**63.93**	12.00	18.75	13.13	11.69	8.36
2003	**58.00**	9.64	17.19	11.28	12.46	9.74

[Figure 9-3] Official Website of Shanghai

Accessed on March 21, 2006 at http://www.shanghai.gov.cn

HONG KONG

The inclusion of Hong Kong as the fourth best practice for the 2005 report is based on its forth place ranking in the 2005 evaluation. Hong Kong received an overall score of 61.51. Similar to Shanghai, the high score for Hong Kong's website is not necessarily based on its best performance in any one category, but rather a reflection of its balanced performance throughout all five categories. Hong Kong was also highly ranked in 2003, second overall, but dropped slightly in 2005. Table 9-4 highlights the comparison in scores by category from 2003 and 2005. Figure 9-4 represents the official website of Hong Kong.

[Table 9-4] Average Scores for Hong Kong in 2005 and 2003

Year	Score	Privacy	Usability	Content	Service	Participation
2005	**61.51**	15.60	16.25	13.75	13.73	2.18
2003	**66.57**	15.36	19.38	13.19	14.04	4.62

[Figure 9-4] Official Website of Hong Kong

Accessed on March 22, 2006 at http://www.info.go.hk

SYDNEY, AUSTRALIA

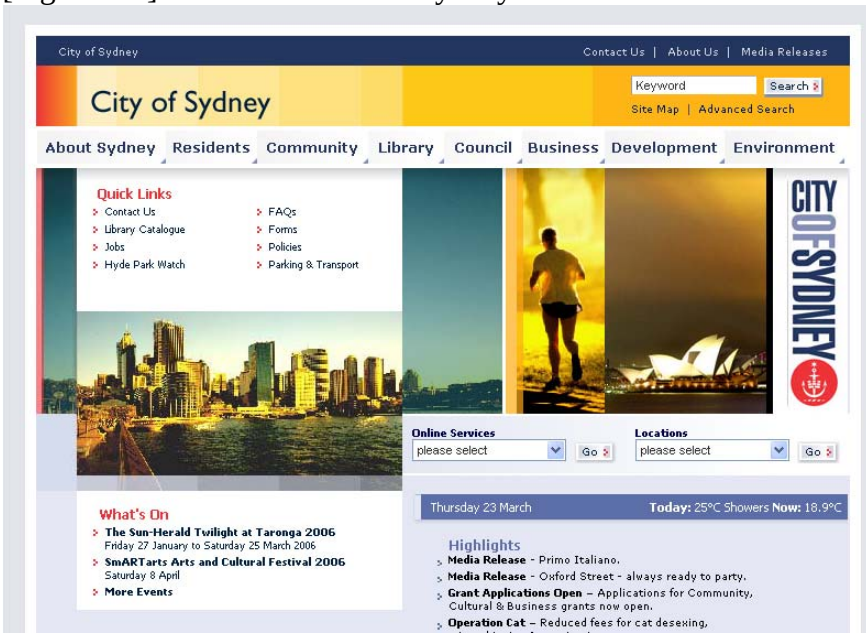
The inclusion of Sydney as the fifth best practice for the 2005 report is based on its fifth place ranking in the 2005 evaluation. Sydney received an overall score of 60.82. Not only was Sydney a best practice in overall performance, but it also represents how a municipal website can quickly improve in performance over a short period of time. Sydney increased from its 19th place ranking to a top five ranking for 2005. It score increased in all five categories for a

total score increase of 23.41. Table 9-5 highlights the comparison in scores by category from 2003 and 2005. Figure 9-5 represents the official website of Sydney.

[Table 9-5] Average Scores for Sydney in 2005 and 2003

Year	Score	Privacy	Usability	Content	Service	Participation
2005	**60.82**	16.80	17.81	12.50	8.98	4.73
2003	**37.41**	6.79	12.19	9.15	6.32	3.85

[Figure 9-5] Official Website of Sydney



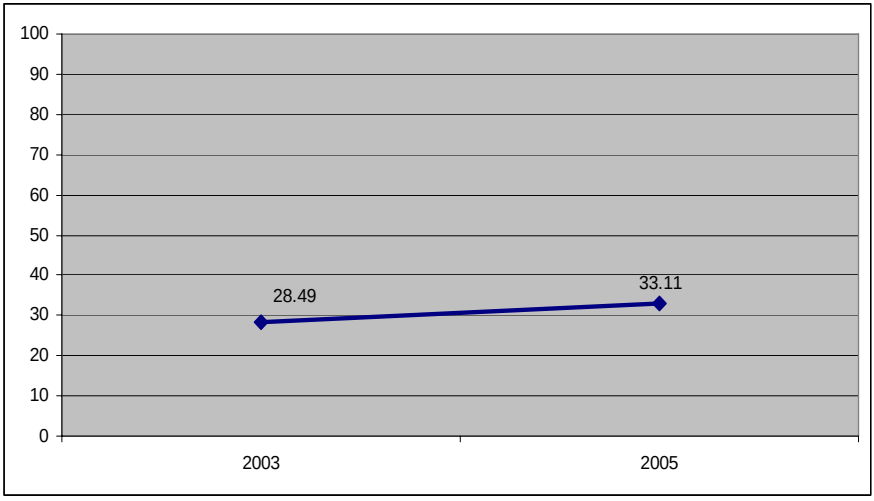
Accessed on March 22, 2006 at http://www.cityofsydney.nsw.gov.au

10

LONGITUDINAL ASSESSMENT

The following chapter outlines the comparisons between the findings from the 2003 evaluation and the findings of the 2005 evaluation. Of note, the overall average score for municipalities surveyed has increased from 28.49 in 2003 to 33.11 in 2005 (Figure 10-1). This would be the expectation for municipalities increasingly seeking ways to utilize technology to increase effectiveness and efficiency. The Internet is an ideal medium for meeting such goals. Table 10-1 and Figure 10-2 highlight these increases by continent. All six identified regions have collectively improved in their e-governance performance.

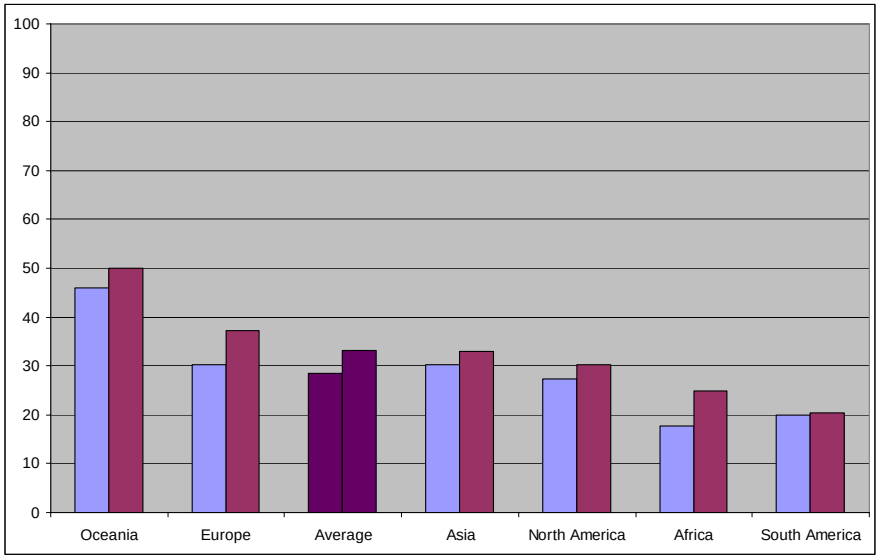
[Figure 10-1] Overall Average Score Comparison for 2005 and 2003



[Table 10-1] Average Score by Continent for 2005 and 2003

	Oceania	Europe	Average	Asia	North America	Africa	South America
2005 Overall Averages	49.94	37.17	33.11	33.05	30.21	24.87	20.45
2003 Overall Averages	46.01	30.23	28.49	30.38	27.42	17.66	20.05

[Figure 10-2] Average Score by Continent for 2003 and 2005



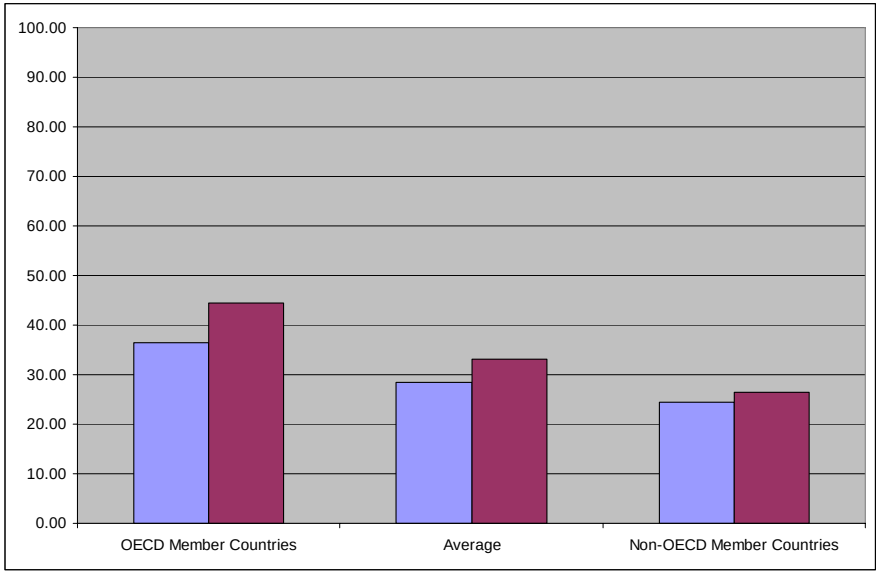
The improvements in score from 2003 to 2005 are represented by both OECD and non-OECD member countries. Municipalities surveyed from OECD member countries increased in average score from 36.34 to 44.35. Municipalities surveyed from non-OECD member countries increased in average score from 24.36 to 26.50. The most important finding between OECD and non-OECD member countries is that the gap in average scores has increased since 2003. Although the overall average score has improved for non-OECD member countries, it has not done so at the rate of OECD member countries. Table 10-2 above and Figure 10-3

below highlight these findings.

[Table 10-2] Average Scores by OECD Member and Non-Member Countries for 2005 and 2003

	OECD	Average	Non-OECD
2005 Overall Averages	44.35	33.11	26.50
2003 Overall Averages	36.34	28.49	24.36

[Figure 10-3] Average Score of Cities in OECD Member and Non-Member Countries for 2003 and 2005



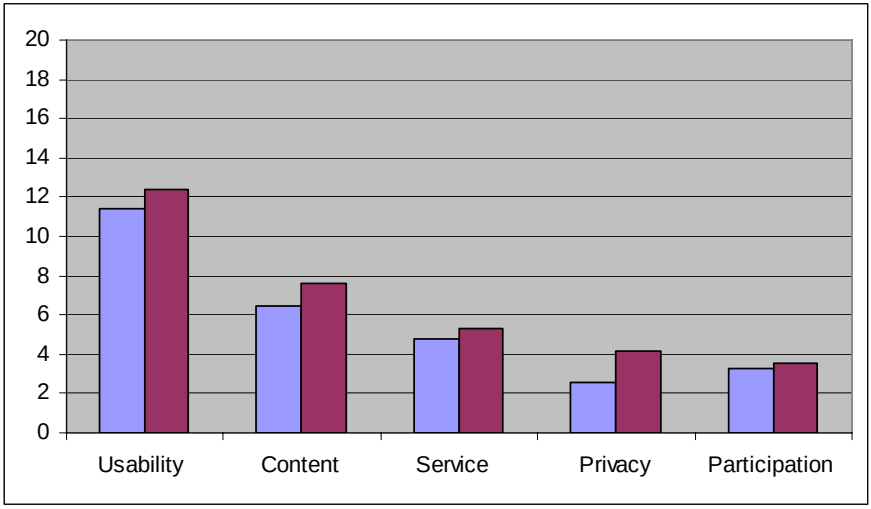
Specific increases in the five e-governance categories have been discussed in the previous chapters, but it is important to note that the most significant improvement in average score is in the area of Privacy and Security. Municipalities have recognized website security and citizen privacy as key components to effective and efficient websites. The category with the smallest increase in average score is Citizen Participation. Municipalities still have not found that citizen participation in government is a critical

component for online functions. Table 10-3 and Figure 10-4 highlight these findings.

[Table 10-3] Average Score by E-governance Categories in 2005 and 2003

	Usability	Content	Service	Privacy & Security	Citizen Participation
2005 Average Scores	12.42	7.63	5.32	4.17	3.57
2003 Average Scores	11.45	6.43	4.82	2.53	3.26

[Figure 10-4] Average Score by E-governance Categories in 2003 and 2005



The following section highlights some of the changes in the individual municipal rankings from 2003 to 2005. Table 10-4 shows the rankings of the top 10 municipalities based on the 2005 evaluations, as well as their change in ranking position. Websites would not be expected to decrease in score or ranking significantly, as a reduction in website services and functions is not a common practice. For the most part, ranking changes were three places or

less; however, there are significant changes in a few websites that have improved over the two years between evaluations. Those websites that have improved their websites significantly, as is apparent by their increase in overall ranking, are Sydney, Zurich, and Riga. Sydney moved up 14 places in ranking to a fifth place ranking in 2005. Zurich moved up 27 places to eighth overall. Riga represented the most significant increase in rankings from those municipal websites evaluated in 2003. Riga moved up 52 places to tenth overall in the 2005 evaluation.

[Table 10-4] Change in Rank Between 2003 and 2005 Evaluations

Ranking	City	Country	2003	2005	Rank (2003)	Rank 2005	Change in Rank
1	Seoul	Korea	73.48	81.70	1	1	**0**
2	New York	United States	61.35	72.71	4	2	**+2**
3	Shanghai	China	58.00	63.93	5	3	**+2**
4	Hong Kong	Hong Kong	66.57	61.51	2	4	**-2**
5	Sydney	Australia	37.41	60.82	19	5	**+14**
6	Singapore	Singapore	62.97	60.22	3	6	**-3**
7	Tokyo	Japan	46.52	59.24	9	7	**+2**
8	Zurich	Switzerland	28.59	55.99	35	8	**+27**
9	Toronto	Canada	46.35	55.10	10	9	**+1**
10	Riga	Latvia	17.12	53.95	62	10	**+52**

As was discussed in the Methodology Chapter, the 2005 Rutgers-SKKU E-Governance Performance Index differs slightly from the one used in 2003. The variation in scores can in part be addressed by these improvements. However, as Table 10-5 indicates, these changes were minimal and would not greatly affect the overall performance between a website evaluation in 2003 and an evaluation of performance in 2005. In 2003, we utilized a total of 92 measures. This most recent study has further developed the research instrument to include 98 measures. The most significant change was

in the Citizen Participation component, where six new research questions were added. These new questions are, in part, recognition of the growing literature focusing on the various methods for more digitally-based democracy. The new questions for the Citizen Participation component bring the total number of questions to 20, with a total possible raw score of 55. In addition, one question was removed from the Security and Privacy component. That question focused on the scanning of viruses during download of files from the municipal website. This aspect was found to be more dependent on personal computers than as a function of a municipal website's responsibility. The removal of the question for the Security and Privacy component brings the total number of questions to 18, with a total possible raw score of 25. The final change to the E-Governance Performance Index was a question added to the Content component. The additional question focuses on the number of possible downloadable documents from a municipal website. The new question for Content brings the total number of questions to 20, with a total possible raw score of 48.

[Table 10-4] E-Governance Performance Index Comparison

Category	2005	2003	Change	Description
Privacy	Q1~18	Q1~19	-1	Deleted question on scanning of viruses during downloadable files
Usability	Q19~38	Q20~39	0	No change
Content	Q39~58	Q40~58	+1	Added question focusing on the number of possible downloadable documents
Service	Q59~78	Q59~78	0	No change
Participation	Q79~98	Q79~92	+6	Added questions which survey the presence and function of municipal forums, online decision-making (e-petitions, e-referenda), and online surveys and polls
Total	**98 Questions**	**92 Questions**	**6 new Questions**	

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CONCLUSION

The study of municipal e-governance practices throughout the world is an area that clearly requires ongoing research. Our studies in 2003 and 2005 have produced findings that contribute to the e-governance literature, in particular in the areas of website Privacy/Security, Usability, Content, Services, and Citizen Participation. The 2005 study highlights the increased attention spent on Privacy and Security and the need for further attention in the area of Citizen Participation via municipal websites.

In addition, the gap between OECD and non-OECD member countries in average scores has increased since 2003. Although overall average scores have improved for non-OECD member countries, they have not done so at the rate of OECD member countries. As we concluded in 2003, since there is a gap between developed and under-developed countries, it is very important for international organizations such as the UN and cities in advanced countries to attempt to bridge the digital divide. We recommend developing a comprehensive policy for bridging that divide. That comprehensive policy should include capacity building for municipalities, including information infrastructure, content, and applications and access for individuals.

The continued study of municipalities worldwide, with a third evaluation planned in 2007 will further provide insight in the direction of e-governance and the performance of e-governance throughout regions of the world. Every region has examples of best practices for overall performance and in each specific e-governance category. As municipalities seek to increase their municipal website performance, looking within their region is an opportunity to

identify e-governance benchmarks. Those municipalities that serve as top performers in their respective regions can then look at the top ranked cities in municipalities throughout the world. Although the 2005 study highlights increases in e-governance performance throughout the world, continuous improvement should be the norm for every municipality.

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APPENDIX

APPENDIX A

Privacy/ Security	
1-2. A privacy or security statement/policy 3-6. Data collection 7. Option to have personal information used 8. Third party disclosures 9. Ability to review personal data records 10. Managerial measures 11. Use of encryption	12. Secure server 13. Use of “cookies” or “Web Beacons” 14. Notification of privacy policy 15. Contact or e-mail address for inquiries 16. Public information through a restricted area 17. Access to nonpublic information for employees 18. Use of digital signatures
Usability	
19-20. Homepage, page length. 21. Targeted audience 22-23. Navigation Bar 24. Site map	25-27. Font Color 30-31. Forms 32-37. Search tool 38. Update of website
Content	
39. Information about the location of offices 40. Listing of external links 41. Contact information 42. Minutes of public 43. City code and regulations 44. City charter and policy priority 45. Mission statements 46. Budget information 47-48. Documents, reports, or books (publications)	49. GIS capabilities 50. Emergency management or alert mechanism 51-52. Disability access 53. Wireless technology 54. Access in more than one language 55-56. Human resources information 57. Calendar of events 58. Downloadable documents

Service	
59-61. Pay utilities, taxes, fines 62. Apply for permits 63. Online tracking system 64-65. Apply for licenses 66. E-procurement 67. Property assessments 68. Searchable databases 69. Complaints 70-71. Bulletin board about civil applications	72. FAQ 73. Request information 74. Customize the main city homepage 75. Access private information online 76. Purchase tickets 77. Webmaster response 78. Report violations of administrative laws and regulations
Citizen Participation	
79-80. Comments or feedback 81-83. Newsletter 84. Online bulletin board or chat capabilities 85-87. Online discussion forum on policy issues 88-89. Scheduled e-meetings for discussion	90-91. Online survey/ polls 92. Synchronous video 93-94. Citizen satisfaction survey 95. Online decision-making 96-98. Performance measures, standards, or benchmarks