通訊事務管理局辦公室
OFFICE OF THE COMMUNICATIONS AUTHORITY

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The 12th ITU World Telecommunication / ICT Indicators Symposium (WTIS)

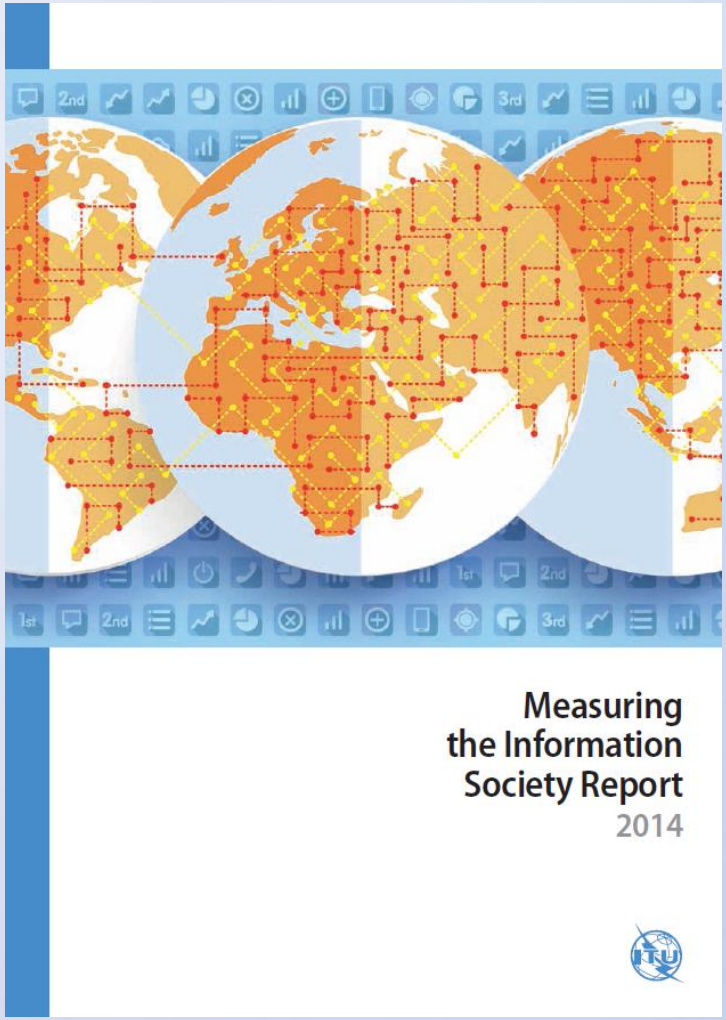
Telecommunications Regulatory Affairs Advisory Committee
21 April 2015

Purpose

- To brief Members about
  - The latest world ranking on the latest information and communication technology (ICT) Development Index
  - Hong Kong's position on the International Telecommunication Union (ITU) "Measuring the Information Society Report"
  - Latest development and future of ICT measurement

12th WTIS

- Annual event organised by the Telecommunication Development Bureau (BDT) of the ITU
- Hosted in Tbilisi, Georgia on 24-26 November 2014
- Attended by 250 participants from 79 Member States, 15 public and private organisations and other international organizations
- A major international forum to discuss international ICT development
- The “Measuring the Information Society Report 2014” was launched in the event



Free version of the report available from
http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2014.aspx

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ICT Development Index (IDI)

- A composite index combining 11 indicators into one benchmark to monitor and compare developments in ICT across countries
- Main objectives of the IDI are to measure countries with regard to:
  - Progress in ICT development
  - The digital divide between countries in terms of ICT development
  - The development potential of ICTs or extent to which countries can make use of ICTs to enhance growth and development

Top IDI Countries

- Ranked 166 countries or economies globally
  - No. 1 Denmark followed by Korea
- Hong Kong ranked 9th globally and 2nd in Asia
- Most of the top ten performers are in Europe

	2013		2012	
Economy	Rank	Score	Rank	Score
Denmark	1	8.86	2	8.78
Korea (Rep.)	2	8.85	1	8.81
Sweden	3	8.67	3	8.68
Iceland	4	8.64	4	8.58
United Kingdom	5	8.50	7	8.28
Norway	6	8.39	6	8.35
Netherlands	7	8.38	5	8.36
Finland	8	8.31	8	8.27
Hong Kong, China	**9**	**8.28**	**11**	**8.08**
Luxembourg	10	8.26	9	8.19
Japan	11	8.22	10	8.15
Australia	12	8.18	12	8.03
Switzerland	13	8.11	13	7.94
United States	14	8.02	14	7.90
Monaco	15	7.93	17	7.72
Singapore	16	7.90	15	7.85
Germany	17	7.90	18	7.72
France	18	7.87	16	7.73
New Zealand	19	7.82	19	7.62
Andorra	20	7.73	24	7.41
Estonia	21	7.68	21	7.54
Macao, China	22	7.66	20	7.59
Canada	23	7.62	25	7.37
Austria	24	7.62	23	7.46
Belgium	25	7.57	26	7.33
	⋮			
China	86	4.64	86	4.39
	⋮			
Ethiopia	162	1.31	162	1.24
Eritea	163	1.20	163	1.18
Chad	164	1.11	164	1.09
Niger	165	1.03	165	0.97
Central African Rep.	166	0.96	166	0.93

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ICT Development Index (IDI)

- The IDI combined 11 indicators in three categories
  - ICT access
  - ICT use
  - ICT skills
- Selection of individual indicators based on:
  - relevance
  - data availability and quality
  - results of various statistical analysis (also determined the weighting of the indicators)

ICT Access	%	Weights
1. Fixed-telephone subscriptions per 100 inhabitants	20	
2. Mobile-cellular telephone subscriptions per 100 inhabitants	20	
3. International Internet bandwidth (bit/s) per Internet user	20	40%
4. Percentage of households with a computer	20	
5. Percentage of households with Internet access	20	

ICT Use	%	Weights
6. Percentage of individuals using the Internet	33	
7. Fixed (wired)-broadband subscriptions per 100 inhabitants	33	40%
8. Wireless-broadband subscriptions per 100 inhabitants	33	

ICT Skills	%	Weights
9. Adult literacy rate	33	
10. Secondary gross enrolment ratio	33	20%
11. Tertiary gross enrolment ratio	33	

ICT Access

- Hong Kong ranked 4th on this category and continually strong in this category
- Measured by :
  - Fixed per 100 inhabitants
  - Mobile per 100 inhabitants
  - International Internet bandwidth per Internet users
  - % of households with computers
  - % of households with Internet access

	2013		2012	
Economy	Rank	Score	Rank	Score
Luxembourg	1	9.46	1	9.40
Switzerland	2	9.36	3	9.30
Iceland	3	9.28	2	9.31
Hong Kong, China	**4**	**9.24**	**4**	**9.16**
Germany	5	9.19	7	8.99
United Kingdom	6	9.18	5	9.10
Malta	7	8.98	10	8.88
Korea (Rep.)	8	8.94	9	8.91
Sweden	9	8.93	6	9.02
Netherlands	10	8.93	8	8.95
	⋮			
Singapore	13	8.61	12	8.53
Japan	14	8.40	15	8.26
	⋮			
Macao, China	25	7.88	24	7.90
	⋮			
China	89	5.10	91	4.78
	⋮			

	2007	2008	2010	2011	2012	2013
Fixed line per 100 inhabitant	59.4	60.4	61.8	61.0	61.3	63.0
Mobile per 100 inhabitant	154.7	167.2	195.6	214.7	229.2	238.7
International Internet bandwidth per user (Bit/s)	483383	465650	776625	1079661	1424597	1762774
% of households with computers	74.0	74.6	77.9	79.1	80.0	81.9
% of households with Internet	70.1	70.9	76.4	77.5	77.9	79.9

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ICT Use

- Hong Kong ranked 13th on this category
- Measured by :
  - Percentage of individuals using the Internet
  - Fixed (wired) broadband subscriptions per 100 inhabitants
  - Wireless-broadband subscriptions per 100 inhabitants

	2013		2012	
Economy	Rank	Score	Rank	Score
Denmark	1	8.71	1	8.47
Sweden	2	8.29	2	8.22
Korea (Rep.)	3	8.26	3	8.20
Finland	4	8.09	4	8.01
Norway	5	8.07	5	7.99
United Kingdom	6	7.88	9	7.39
Japan	7	7.80	6	7.78
Luxembourg	8	7.66	7	7.54
Iceland	9	7.65	8	7.47
United States	10	7.50	11	7.21
⋮				
Hong Kong, China	**13**	**7.36**	**14**	**6.93**
⋮				
Singapore	15	7.19	13	7.14
⋮				
Macao, China	18	7.01	16	6.81
⋮				
China	77	2.99	72	2.68
⋮				

	2007	2008	2010	2011	2012	2013
Internet users per 100 inhabitants	65.0	66.7	72.0	72.2	72.9	74.2
Fixed broadband per 100 inhabitants	27.3	28.3	29.9	31.6	31.2	30.8
Mobile broadband per 100 inhabitants	31.6	40.3	38.9	74.5	83.2	95.4

ICT Skills

- Hong Kong ranked 50th on this category
- Measured by :
  - Adult literacy rate
  - Secondary gross enrolment ratio
  - Tertiary gross enrolment ratio
- Basically remained stable in the last 5 years

	2013		2012	
Economy	Rank	Score	Rank	Score
Greece	1	9.90	1	9.90
Korea (Rep.)	2	9.81	2	9.81
Finland	3	9.75	3	9.75
Belarus	4	9.69	4	9.69
United States	5	9.56	5	9.56
Australia	6	9.50	6	9.50
Slovenia	7	9.43	7	9.43
Andorra	8	9.41	8	9.41
Spain	9	9.41	9	9.41
Iceland	10	9.32	10	9.32
⋮				
Japan	32	8.67	32	8.67
⋮				
Macao, China	40	8.53	40	8.53
⋮				
Hong Kong, China	**50**	**8.24**	**50**	**8.24**
⋮				
Singapore	59	7.9	59	7.9
⋮				
China	84	7.02	84	7.02
⋮				

	2007	2008	2010	2011	2012	2013
Secondary Enrolment Ratio	83.1	82.9	83.0	80.1	88.7	88.7
Tertiary Enrolment Ratio	34.3	55.6	59.7	60.4	59.7	59.7
Adult Literacy Rate	99.0	99.0	99.0	99.0	99.0	99.0

Future of ICT Indicators – Big Data

- "Big Data" is the digital footprints generated from data flows
  - Collective network activities
  - Data traffic patterns
  - Traces of data left behind from using ICT
- Great promises
  - Proliferation of mobile internet and portable devices
  - Potential being explored by United Nations Statistics Commission (UNSC), World Bank, and national statistics organizations (NSOs)
  - ITU is suggesting members to explore big data's potential

Potential of Big Data

- Complementing official statistics
  - Since official statistics focused on the supply side
  - Broader data produced (Variety, Velocity, Volume, Value, Veracity)
- Providing timely and relevant evidence for policy making as well as for private sectors
- Examples of using big data to solve social and economic issues
  - Mobile phone data analysis in tracking human mobility and the spread of Ebola pandamic[1]
  - Roaming-in mobile data analysis in understanding tourist visit patterns in the Netherlands

Note 1: Using Big Data To Fight Pandemics (Telefonica Research)
http://www.itu.int/en/ITU-D/Statistics/Documents/events/wtis2014/004_E_doc.pdf
http://techcrunch.com/2014/11/08/using-big-data-to-fight-pandemics/

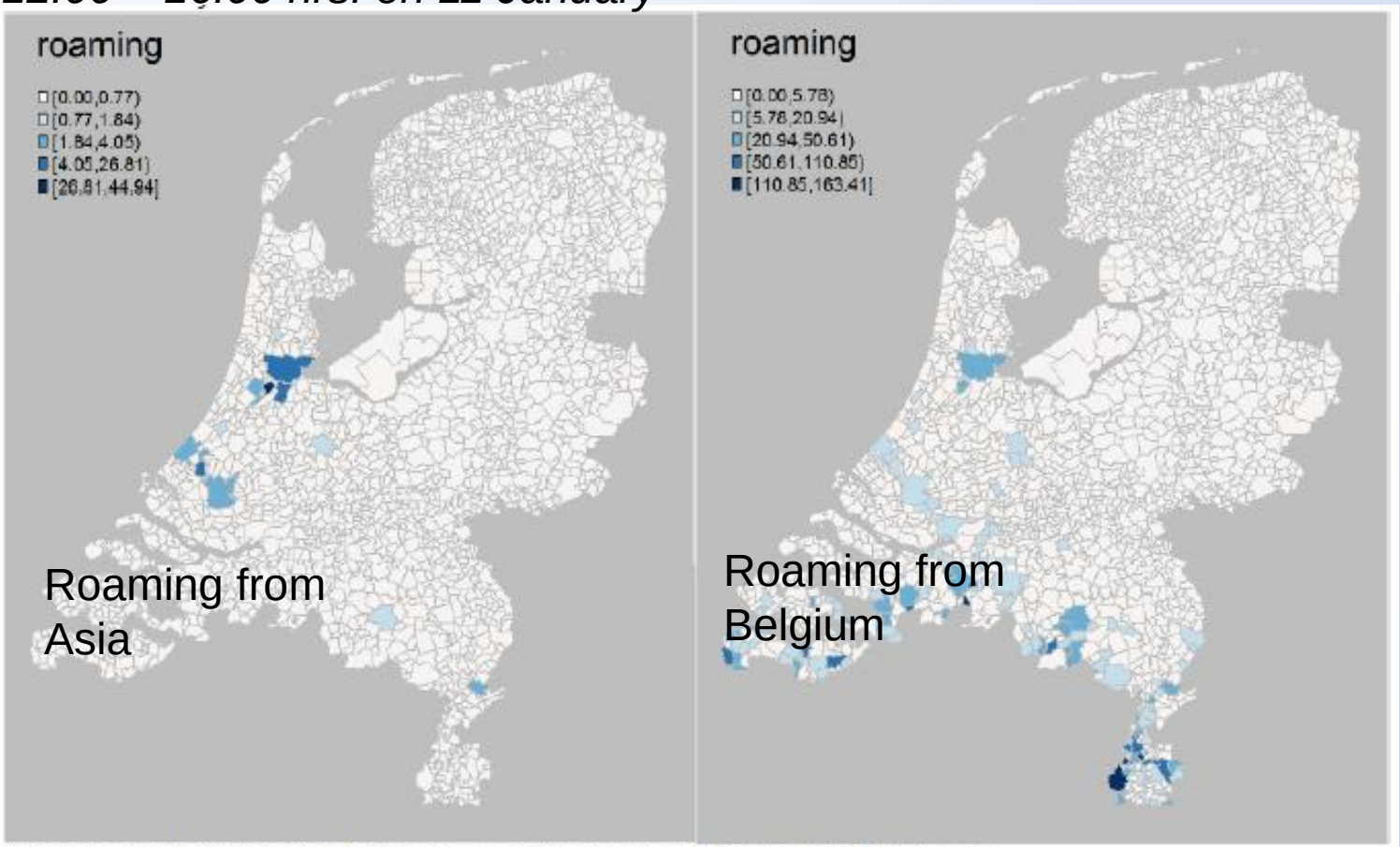
Detailed Example of using Big Data

- Roaming-in mobile data analysis in the Netherlands[2]
  - Statistics Netherlands innovation on tourism statistics through the use of big data sources supplied from mobile operators
  - Based on the no. of connections made to which cell towers, at what time and by differentiating local users and inbound roamers
  - Could analyse on the number of visiting tourist, their travel patterns and their origins
  - To ensure anonymity: data are aggregated; devices are only assigned with temporary ID no. and are entrusted only by vigorous measures

Note 2: Innovation of tourism statistics through the use of new big data sources (Statistics Netherlands 2014)
http://www.itu.int/en/ITU-D/Statistics/Documents/events/wtis2014/002INF-E.pdf

Detailed Example of using Big Data (2)

Roaming data for Asian (left) and Belgium (right) tourists (devices) from 12:00 – 16:00 hrs. on 11 January



Source: Vodafone and Mezuro, compiled by Statistics Netherlands

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Challenges in using Big Data

- Privacy
  - Use and disclosure of customer information by telecommunications service providers are subject to the Personal Data (Privacy) Ordinance (PDPO) and the telecommunications licence conditions
  - The intended use of personal data likely exceeds any consent given by the customers in their telecommunications service agreements
  - Data aggregation and anonymization may not be able to satisfy the social requirement on privacy
- Security
  - Possibility in disclosure of sensitive information when one source is combined with data from other sources
- Standardisation
  - 85% of big data are estimated to be un-structured
  - Interoperability issues
- Continuity and data preservation
  - volume of data is overwhelming
  - Small incentives and coordination in large scale sharing or pooling of data

Way Forward

- Statistics
  - OFCA will continue the close collaboration with ITU in providing statistics on the telecommunications industry
  - Requirements on data will be reviewed by ITU continuously. We will monitor the changes and revert to the industry.
  - We may explore with the industry on the possibility in obtaining new statistics to take into account future trends
  - We will continue disseminating key telecommunications indicators in OFCA's website (www.ofca.gov.hk/en/media_focus/data_statistics/index.html)

- Big Data
  - ITU will explore ways in collecting big data for statistics studies
  - OFCA will keep in view the development in relation to collection and use of big data

Thank you