

# Digital Opportunity Index

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# Digital Opportunity Index (DOI)



- Why
- How
- Preliminary results
- Conclusions

# WSIS

## Plan of Action



### E. Follow-up and evaluation

28. A realistic international performance evaluation and benchmarking (both qualitative and quantitative), through comparable statistical indicators and research results, should be developed to follow up the implementation of the objectives, goals and targets in the Plan of Action, taking into account different national circumstances.

1. In cooperation with each country concerned, develop and launch a composite **ICT Development (Digital Opportunity) Index**.

# Definitions



- Digital
  - “of or relating to data in the form of numerical digits”
- Opportunity
  - “a good chance for advancement or progress”
- Index
  - “a number (as a ratio) derived from a series of observations and used as an indicator or measure”

*Source:* [www.webster.com](http://www.webster.com)

# Background



- KADO & ITU Digital Bridges initiative, June 2004
- Digital Bridges Symposium  
11 September 2004  
Busan, Republic of Korea
  - Session on ICT Indices



# Partnership



- Partnership of international agencies working to
  - Define common set of core ICT indicators
  - Enhance capacities of national statistical offices
  - Develop global database of ICT indicators
- Adopted a set of core ICT indicators at WSIS Thematic Meeting on Measuring the Information Society, Geneva, 7 to 9 February 2005
  - Side meeting among partnership to discuss

DOI

**Infrastructure  
and access  
core indicators**

**Core indicators  
on access and  
use of ICTs by  
households  
and individuals**

**Core indicators  
on access and  
use of ICTs by  
businesses**

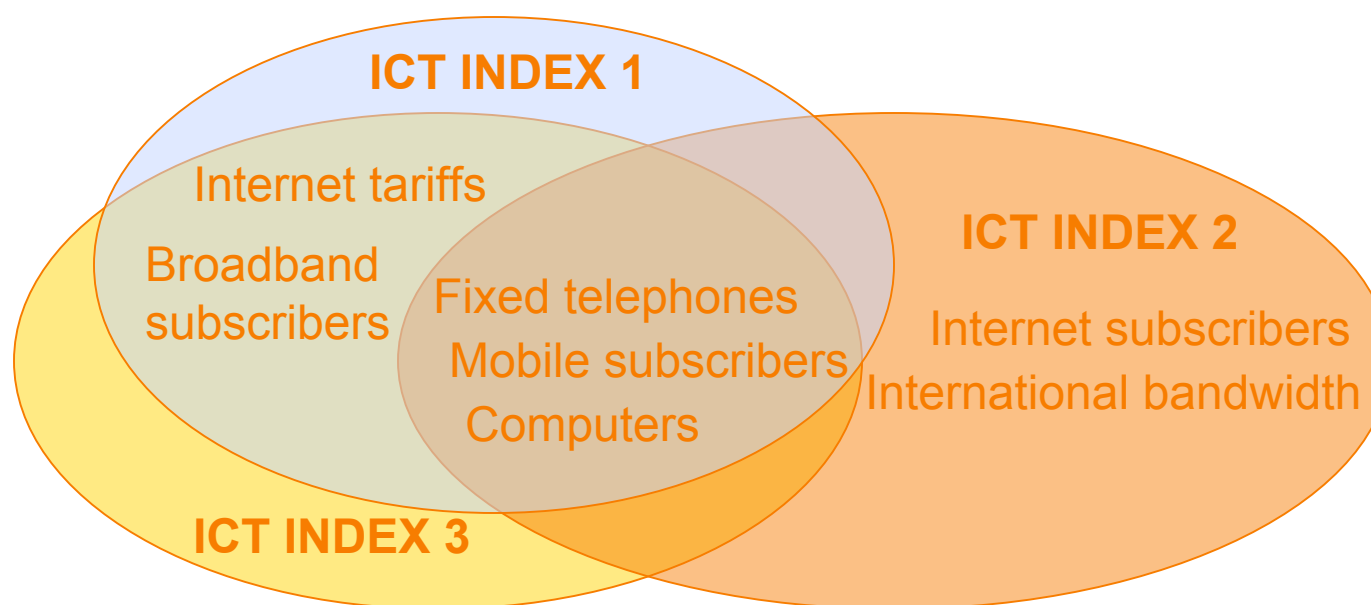
**ICT sector  
basic core**

## Infrastructure & access core indicators



- A-1 Fixed telephone lines per 100 inhabitants
- A-2 Mobile cellular subscribers per 100 inhabitants
- A-3 Computers per 100 inhabitants
- A-4 Internet subscribers per 100 inhabitants
- A-5 Broadband Internet subscribers per 100 inhabitants
- A-6 International Internet bandwidth per inhabitant
- A-7 Percentage of population covered by mobile cellular telephony
- A-8 Internet access tariffs (20 hours per month), in US\$, and as a percentage of per capita income
- A-9 Mobile cellular tariffs (100 minutes of use per month), in US\$, and as a percentage of per capita income
- A-10 Percentage of localities with public Internet access centres (PIACs) by number of inhabitants (rural/urban)

# Indicators & ICT indices



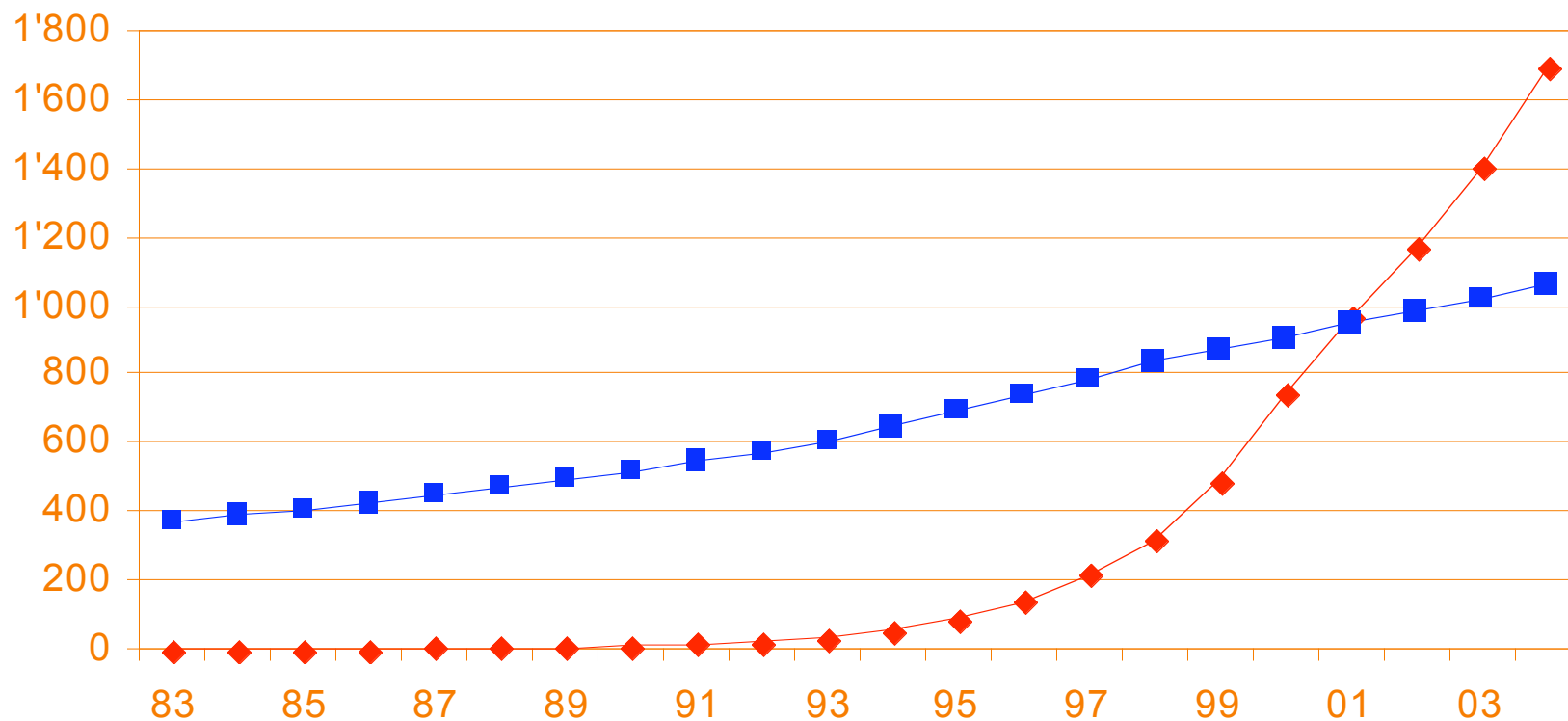
Not in any e-index: Population covered by mobile, mobile tariffs



# Mobile vs. Fixed



## World telephone subscribers, millions



Source: ITU, TMG, Inc.

# Two paths to the information society



**FIXED**

Fixed broadband subscribers

Fixed Internet subscribers

Fixed devices  
(Desktop computer)

Main telephone lines

(Fixed) Internet tariffs

Broadband mobile subscribers

Mobile Internet subscribers

Portable devices  
(Laptop, PDA, Smart phone)

Mobile subscribers

Mobile coverage  
Mobile tariffs

**MOBILE**

# Indicator categories



Broadband subscribers

**Quality**

Internet subscribers  
International bandwidth

**Infrastructure**

Fixed lines  
Mobile subscribers  
Computers

**Access Path**

Population covered by mobile  
Internet tariffs  
Mobile tariffs

**Affordability & Coverage**

# Constructing the index



Indicator	Goal post	Indicator weight	Category weight
Percentage of population covered by mobile	100	33%	25%
Mobile tariffs as a % of per capita income	.16	33%	
Internet tariffs as a % of per capita income	.20	33%	
Fixed telephone lines per 100 inhabitants	75	33%	25%
Mobile cellular subscribers per 100 inhabitants	100	33%	
Computers per 100 inhabitants	75	33%	
(Fixed) Internet subscribers per 100 inhabitants	50	25%	25%
(Mobile) Internet subscribers per 100 inhabitants	75	25%	
International Internet bandwidth per inhabitant (bps)	10'000	50%	
(Fixed) Broadband subscribers per 100 inhabitants	30	50%	25%
(Mobile) Broadband subscribers per 100 inhabitants	100	50%	

**Digital Opportunity Index =  $\Sigma$  Categories**

# Test DOI

Apply to 40 countries  
2003 data



Australia  
Austria  
Belgium  
Canada  
Denmark  
France  
Germany  
Hong Kong  
Israel  
Italy  
Japan  
Korea (Rep.)  
Netherlands  
Singapore  
Spain  
Sweden  
Switzerland  
Taiwan  
United Kingdom  
United States



Argentina  
Brazil  
Chile  
China  
Colombia  
Czech Republic  
Egypt  
Hungary  
India  
Indonesia  
Malaysia  
Mexico  
Peru  
Philippines  
Poland  
Russia  
South Africa  
Thailand  
Turkey  
Venezuela

# Hong Kong, China example



2003	Indicator	Sub index	Weighted	Score
% of population covered by mobile telephony	100	1.00	0.33	<b>0.99</b>
Mobile tariffs as a % of per capita income	0.16	0.99	0.33	
Internet tariffs as a % of per capita income	0.18	0.99	0.33	
Fixed telephone lines per 100 inhabitants	55.8	0.74	0.24	<b>0.76</b>
Mobile cellular subscribers per 100 inhabitants	105.1	1.00	0.33	
Computers per 100 inhabitants	43.5	0.58	0.19	
Internet subscribers	34.4	0.68	0.17	<b>0.66</b>
Mobile telephone Internet subscribers	10.65	0.14	0.04	
International Internet bandwidth per inhabitant	2,742	0.91	0.45	
Broadband Internet subscribers	18.09	0.61	0.30	<b>0.30</b>
Broadband mobile subscribers	-	-	-	

**DIGITAL OPPORTUNITY INDEX (Average of 4 scores)**

**0.68**

# DOI compared to other e-indices



Based on 40 economies		Score	DOI	NRI	ISI	DAI	Orbicom	UNCTAD
	Sweden	0.69	1	4	1	1	1	2
	Denmark	0.69	2	2	2	2	2	3
	Korea (Rep.)	0.68	3	17	13	3	14	10
	Switzerland	0.68	4	7	4	10	6	7
	Hong Kong	0.68	5	5	15	5	7	8
	Singapore	0.66	6	1	9	11	9	5
	Japan	0.63	9	6	14	12	15	13
	United States	0.62	10	3	5	8	5	1
	Egypt	0.31	31	32	33	38	37	37
	Brazil	0.28	35	29	28	29	26	26
	Philippines	0.23	37	36	35	37	36	33
	India	0.14	40	25	38	40	39	39

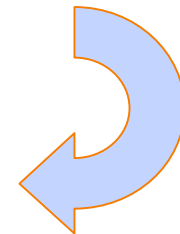
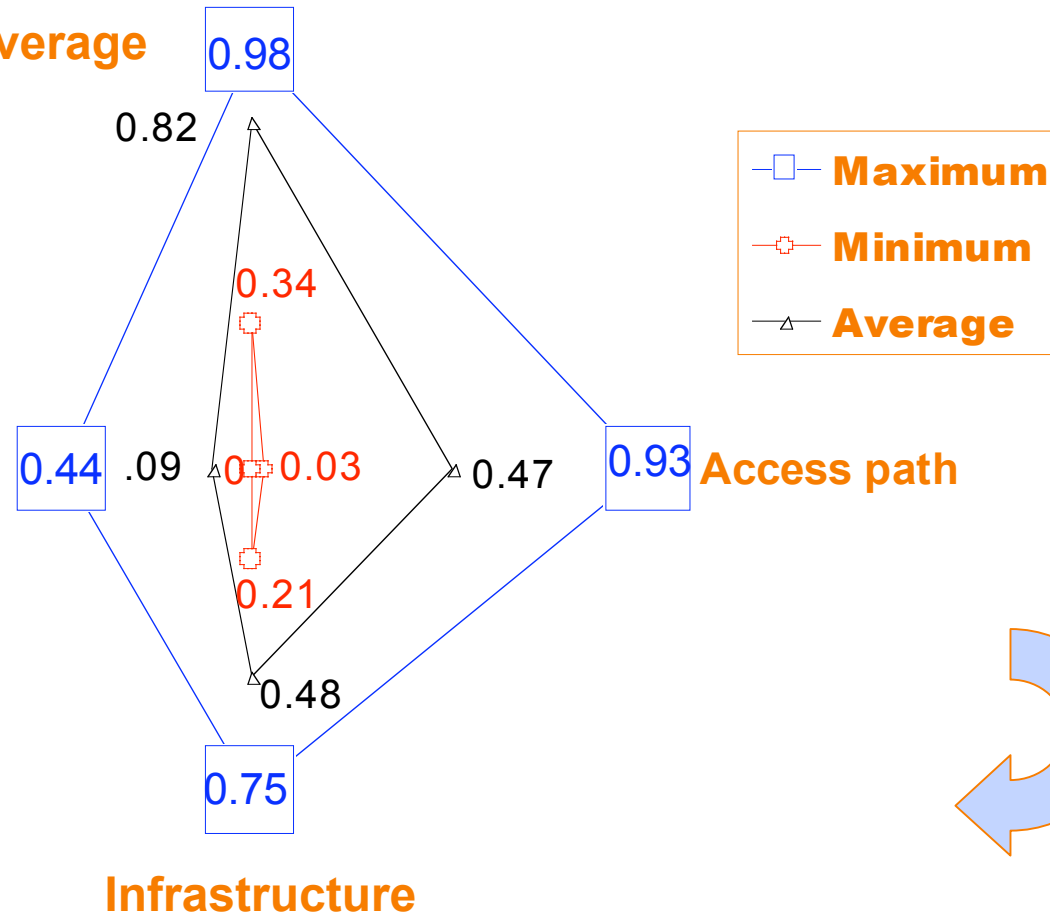
Note: NRI = WEF Network Readiness Index, ISI = IDC Information Society Index, DAI = ITU Digital Access Index. Rankings are based on DOI score taken to 3 decimal points.

# How digital is the world?



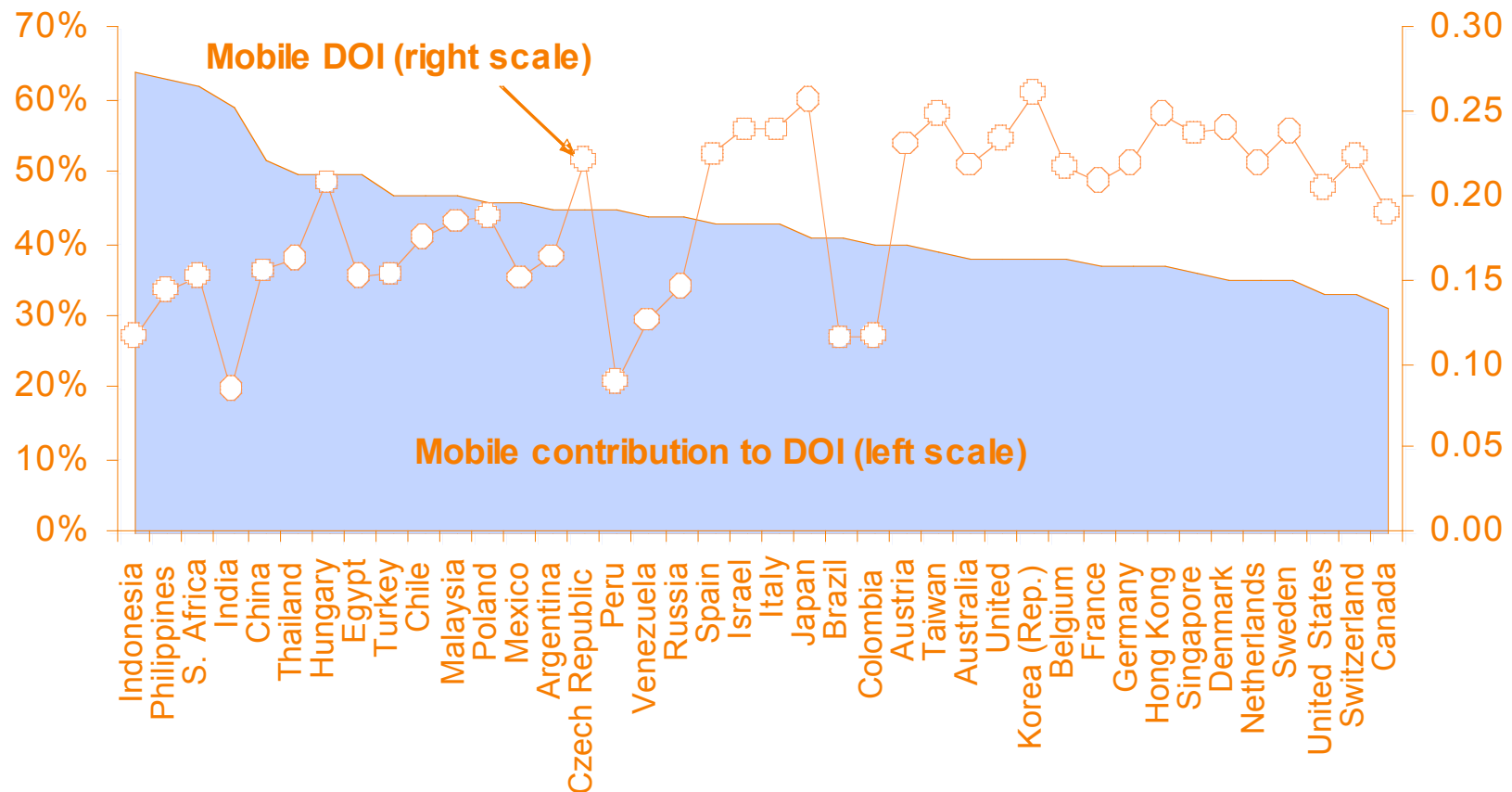
Affordability & coverage

Quality





# Mobile DOI

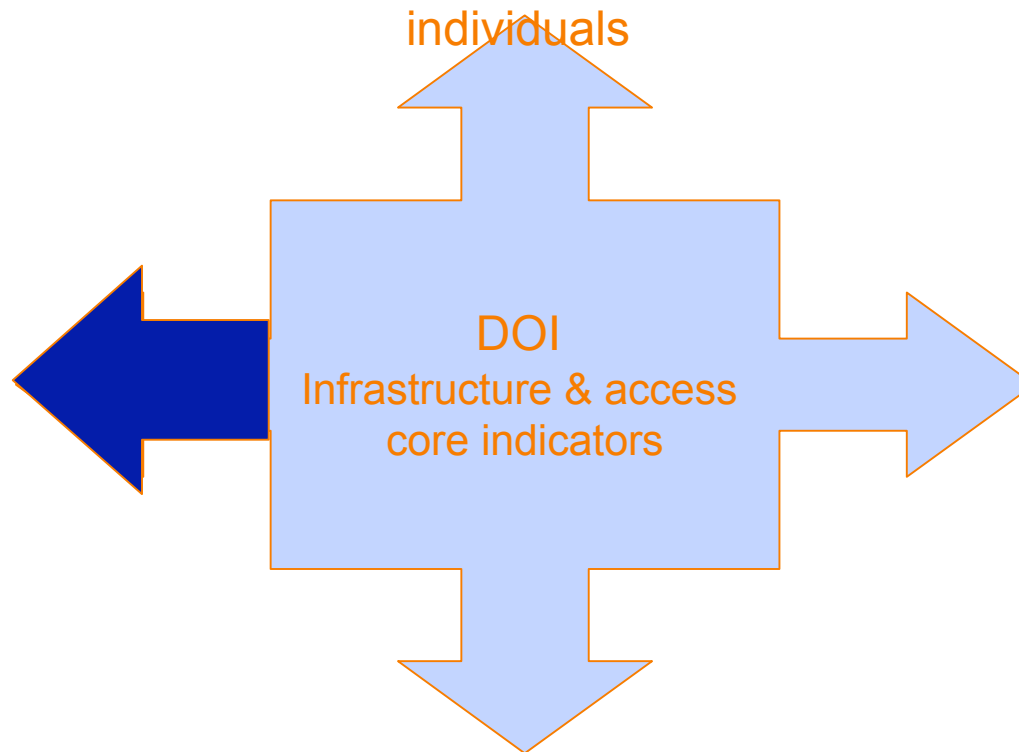


# Modular



Core indicators on access and use  
of ICTs by households and  
individuals

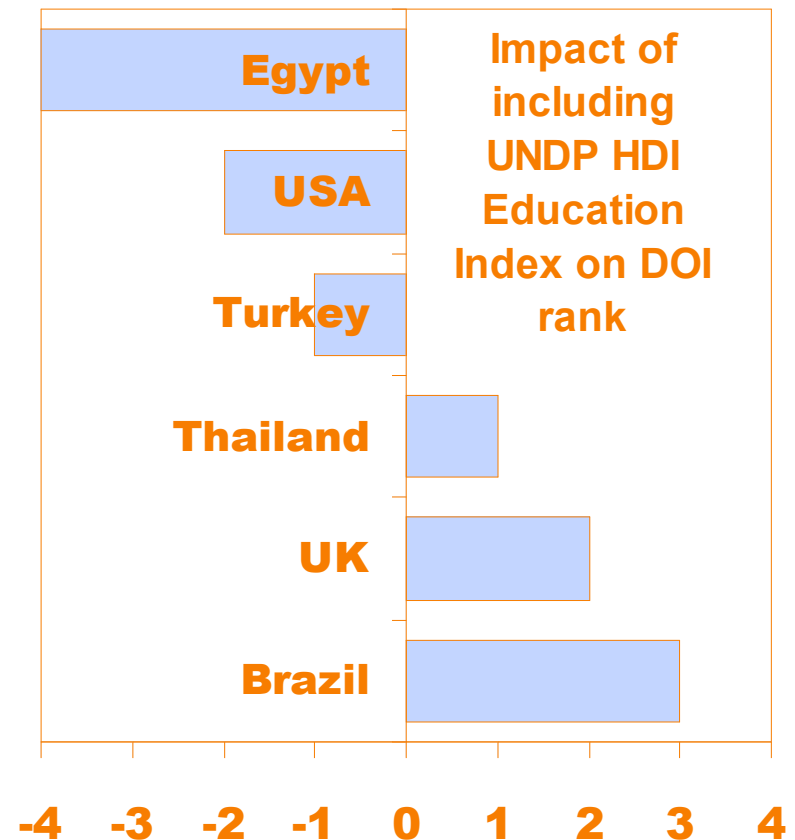
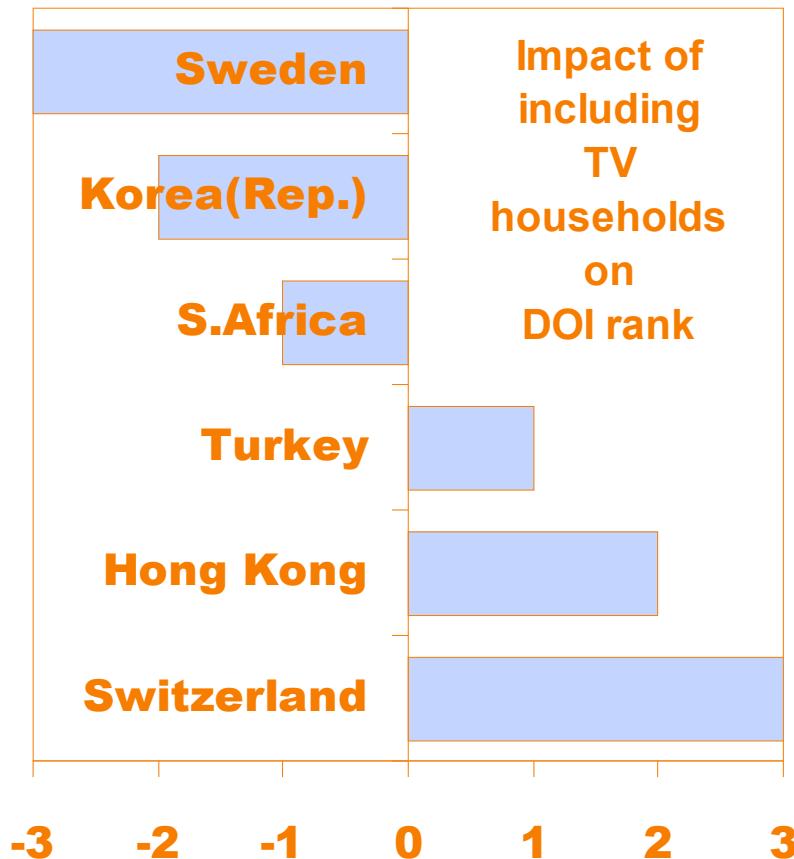
Non e-indices  
(e.g., UNDP  
Human  
Development  
Index)



Core indicators  
on access and  
use of ICTs by  
businesses

Future core indicators (e.g., education, government, health, etc.)

# Extending DOI



# Partnership aspects



- International organizations
  - Coordinate & extend core indicators, refine DOI, provide technical assistance & training
- Governments
  - Provide data, use DOI!
- Private sector
  - Provide support (after all data very valuable for private sector investment decisions)
- Civil society
  - Valuable tool for benchmarking country progress against others as well as measuring internal digital divides (gender, income, region, etc.)

# What about WSIS targets?



- a) to connect all villages with ICTs
- b) to connect all educational institutions
- c) to connect all scientific and research centres
- d) to connect all public libraries, museums and archives
- e) to connect all health centres and hospitals
- f) to connect local and central government departments
- g) to adapt all primary and secondary school curricula to meet the challenges of the Information Society
- h) to ensure that all have access to television and radio services
- i) to encourage the development of content on the Internet
- j) to ensure that more than half the world's inhabitants have access to ICTs within their reach

# Conclusions



- Unlike other e-indices, DOI is based on a globally endorsed set of indicators
- Standardized indicators suggests availability & quality will increase over time
- DOI uses popular and transparent methodology
- Modular approach means that other indicators and sub-indices can be easily included
- Gender, community access & national views can be incorporated

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