



# Greasing the Wheels of the Internet Economy

Jia-Rong Low, Strategies & Initiatives Director | 25 June 2015

# What does ICANN do?

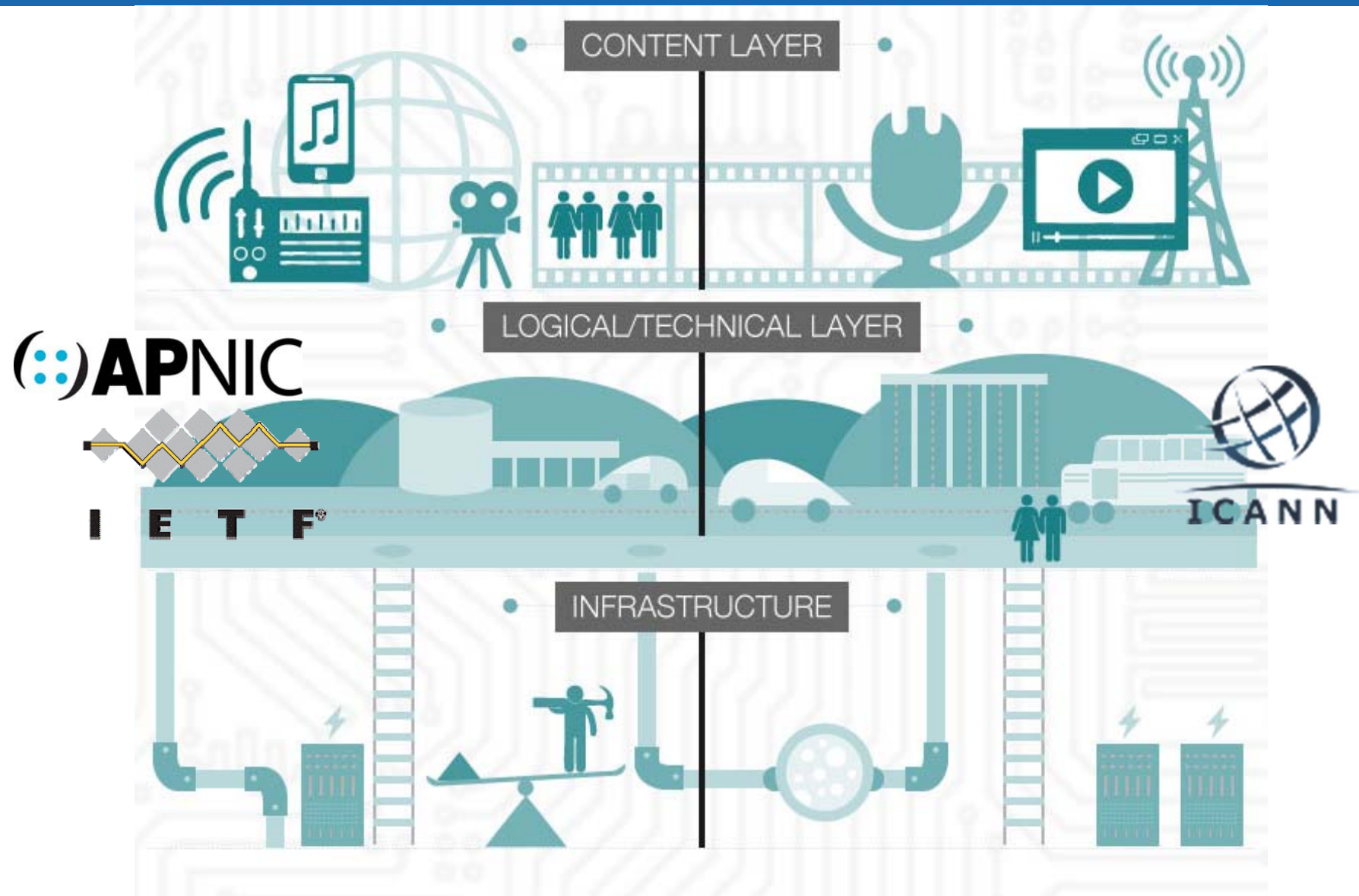
## WHAT DOES ICANN DO?

To reach another person on the Internet you have to type an address into your device—a name or a number. That address must be unique, so computers will know where to find each other. ICANN maintains and administers these unique identifiers across the world. Without ICANN's management of this system, known as the Domain Name System (DNS), we wouldn't have a global, scalable Internet where we can find each other.



- **IP address**  
(192.0.32.7)  
(2607:f0d0:1002:51::4)
- **Domain Names**  
.com .org .net;  
.my .sg .cn .in .bd;  
.संगठन , .游戏, .شبكة

# The Internet Architecture



# Greasing the Wheels of the Internet Economy

- ICANN Commissioned the Boston Consulting Group (BCG) to conduct this study in 2014
- e-Friction: Barriers that prevent countries, companies and consumers from realizing the full benefits of the Internet
- <https://www.icann.org/en/system/files/files/bcg-internet-economy-27jan14-en.pdf>

THE CONNECTED WORLD

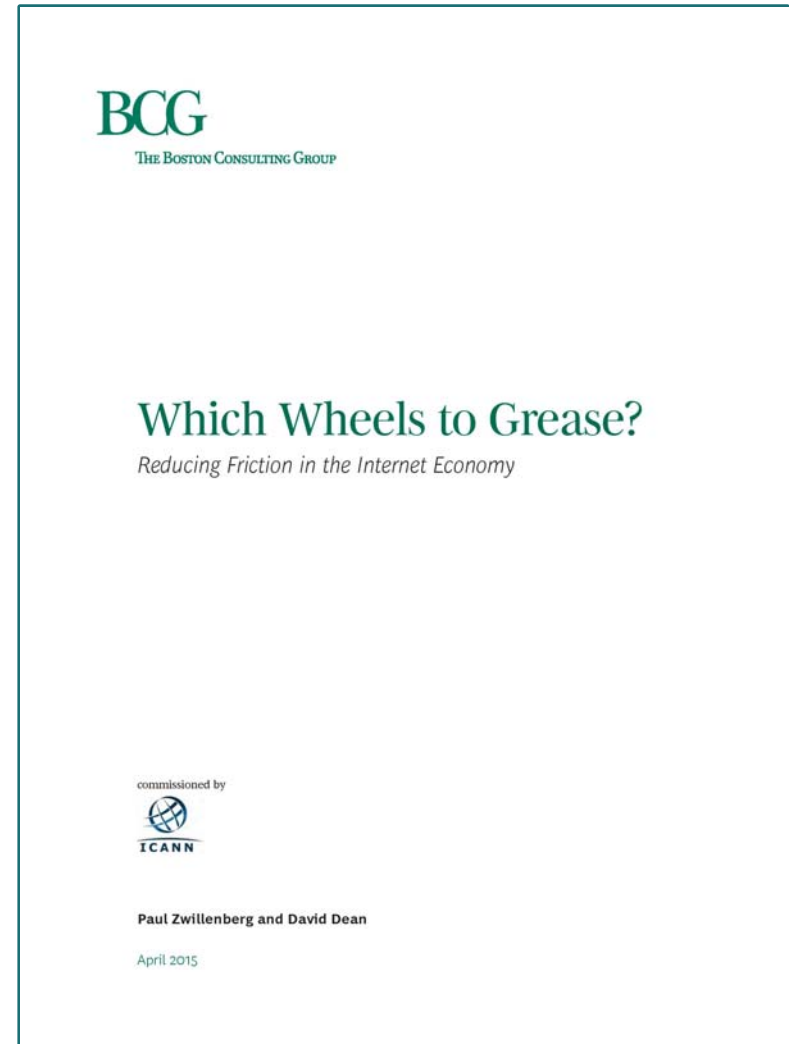
## GREASING THE WHEELS OF THE INTERNET ECONOMY



BCG

# Which Wheels to Grease?

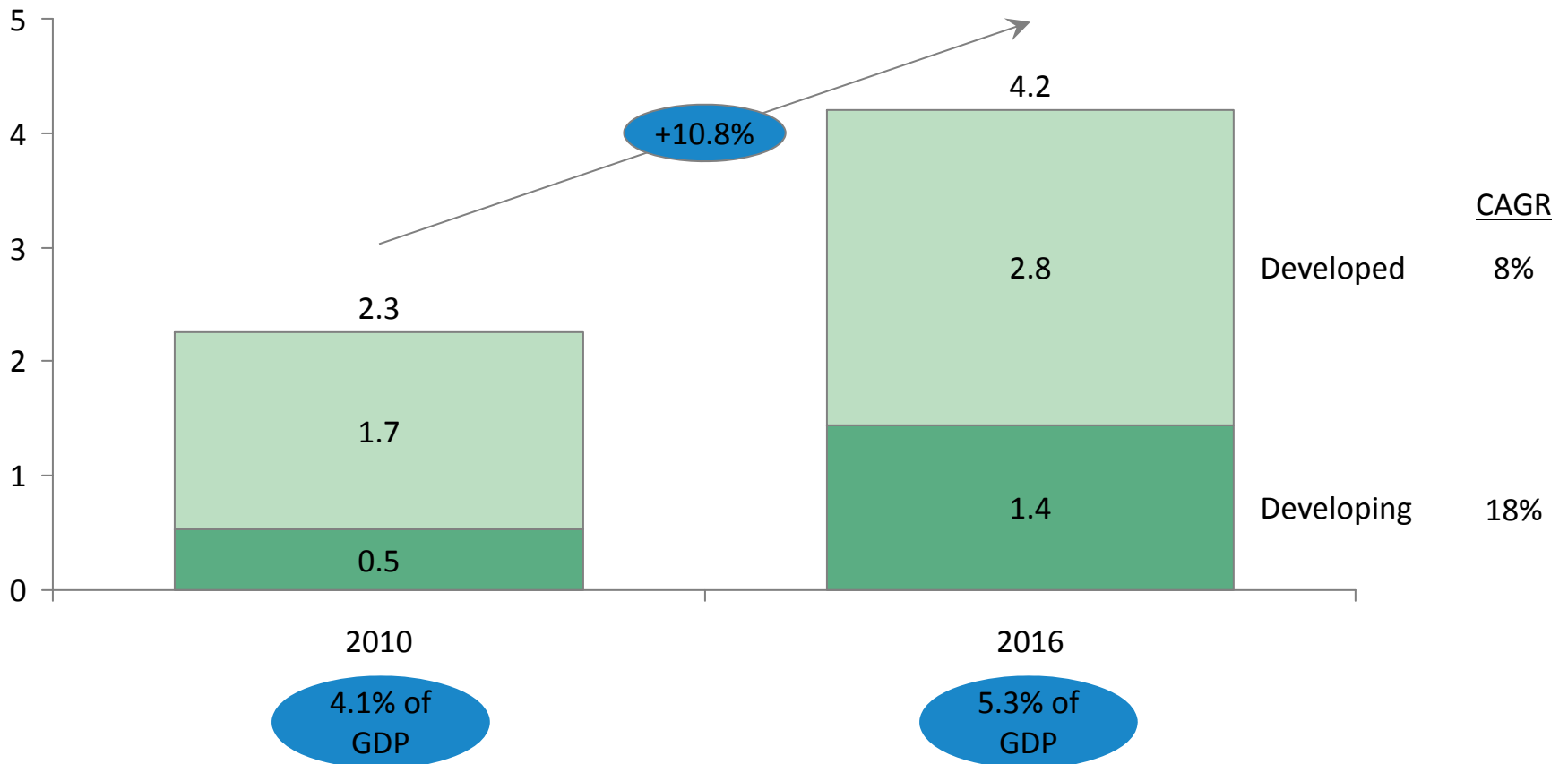
- Update to the 2014 study
- This update expands on the analysis of e-Friction, and defines clusters of countries that face similar challenges and can work together towards similar solutions.
- <https://www.icann.org/en/system/files/files/bcg-wheels-grease-friction-16apr15-en.pdf>



# What is the Internet Economy?

- To grow to \$4.2 trillion by 2016 (G20 countries)
- Growing at 15-25% (developing markets)

Internet economy (trillion \$)



Note: G20 countries only  
Source: EIU; Ovum; Gartner; Euromonitor; OECD; country-specific sources; BCG analysis

# The Internet is a growing economic force

....but it is not frictionless

Some practical examples:



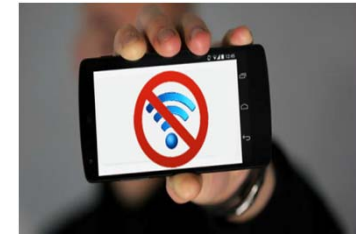
"Is there network coverage?"



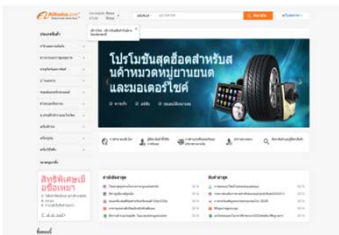
"Do I have an access device?"



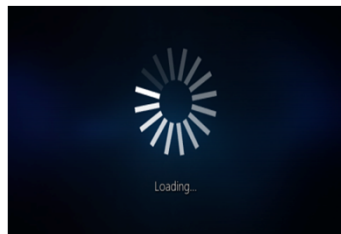
"How much is this going to cost me?"



"No connectivity ....."



"I don't speak Thai!"



"Will my bid go through in time?"



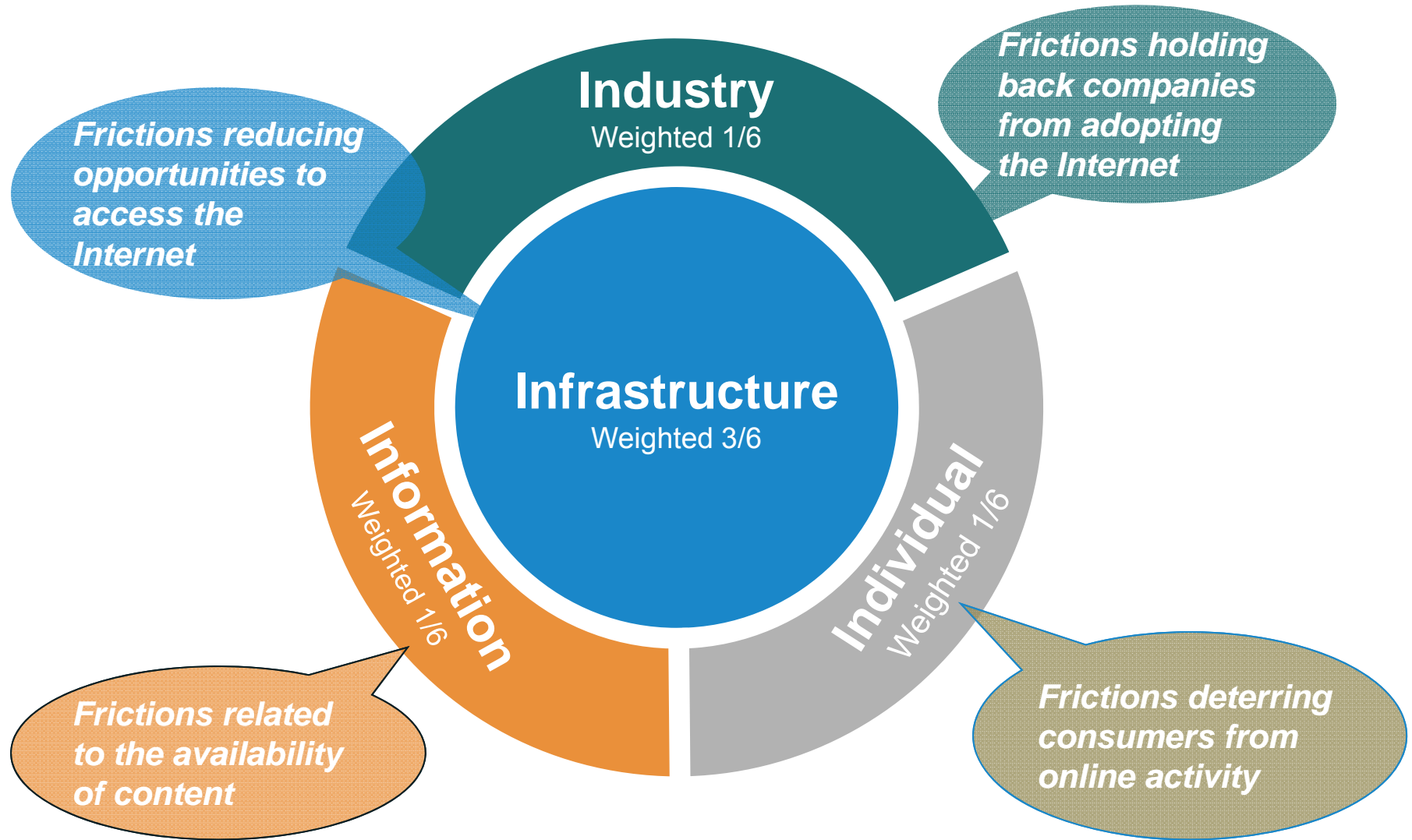
"Can I trust Online payments?"



"Can it be delivered here?"

# “e-Friction”

Factors that prevent people from realising the Internet’s full benefits





# e-Friction: 55 indicators

Infrastructure		Industry		Individuals		Information					
Infrastructure	Access	Internet bandwidth/capita (ITU)	Infra	Quality of transport infra for physical fulfilment, 0-7 (WEF)	Ability	Quality of educational system, 0-7 (WEF)	Volume	No. of domains registered to each ccTLD/cap (Google)			
		International Internet bandwidth/cap (Telegeography)		Quality of electricity and telephony infra, 0-7 (WEF)		Adult literacy rate, % (WEF)		Number of Wikipedia pages in home language (Wikipedia)			
		Consumer broadband penetration, % (Pyramid)		Labour		ICT skills, 1-10 (IMD)		ICT skills, 1-10 (IMD)	Number of micro messages made in home language, messages/day (Twitter)		
		Business fixed broadband penetration, % (Pyramid Research)				Quality of math and science education, 0-7 (WEF)		Internet users, % of pop (World Bank)	Fraction of population using social networks, % (Comscore)		
		Mobile Internet subscription penetration, % (Ovum)				Availability of qualified engineers, 0-7 (WEF)		Banking	Availability of financial services, 0-7 (WEF)	Commitment to open data, 0-1 (Open Knowledge Foundation)	
	Number of IPv4 registrations/capita (Potaroo)	Capacity for innovation, 0-7 (WEF)	Affordability of financial services, 0-7 (WEF)	Attitudes	Freedom of the press index, 0-100 (Reporters Without Borders)						
	Number of IPv6 registrations/capita (Potaroo)	Capital	Financial market sophistication, 0-7 (WEF)		Market penetration of bank accounts, % (WEF)	Obstacles	Freedom on the Net, score 0-100 (Freedom House)				
	Peak fixed BB connection speed, Mbps (Akamai)		Financing through local equity market, 0-7 (WEF)	Population using online personal finance, % (ComSc)	Trust in privacy of credit card/financial data, survey score (BCG)						
	Average fixed BB connection speed, Mbps (Akamai)		Ease of access to loans, 0-7 (WEF)	Debit card penetration, % (WEF)	Trust in privacy of other personal data, survey score (BCG)						
	Peak mobile connection speed, Mbps (Akamai)	Economy	Foreign direct investment to GDP, ratio (WEF)	Payments	Trust	Obstacles	Obstacles	Obstacles			
	Average mobile connection speed, Mbps (Akamai)		Venture capital availability, 0-7 (WEF)						Cyber security being adequately addressed, 1-10 (IMD)		
	Fixed BB pricing, \$/month at PPP (WEF)		Strength of IP protection, 0-7 (WEF)						Trust in privacy of credit card/financial data, survey score (BCG)		
	Mobile pricing, \$/min local call off-net (peak) at PPP (IMD)	Tech	Burden of customs procedures, 0-7 (WEF)	Trust	Trust	Obstacles	Obstacles	Obstacles			
	Traffic volumes/capita, Mbps (Cisco)		Prevalence of trade barriers, 0-7 (WEF)						Trust in privacy of other personal data, survey score (BCG)		
	International traffic volumes / capita, Mbps (Telegeography)		Number of days to set up a business (WEF)						Trust in privacy of other personal data, survey score (BCG)		
Exchange points/capita (Euro-IX)	Tech	Firm-level technology absorption, 0-7 (WEF)	Trust	Trust	Obstacles	Obstacles	Obstacles				
Number of networks (ASNs)/cap (Potaroo)		Tech						Trust	Trust	Obstacles	Obstacles
Content registered to ccTLD hosted onshore, % (Pingdom)											
Existence of indep. regulator, 0-1 score (ITU)	Tech		Trust	Trust	Obstacles						

Source: BCG e-Friction model

# E-Friction Index Ranking (65 countries)

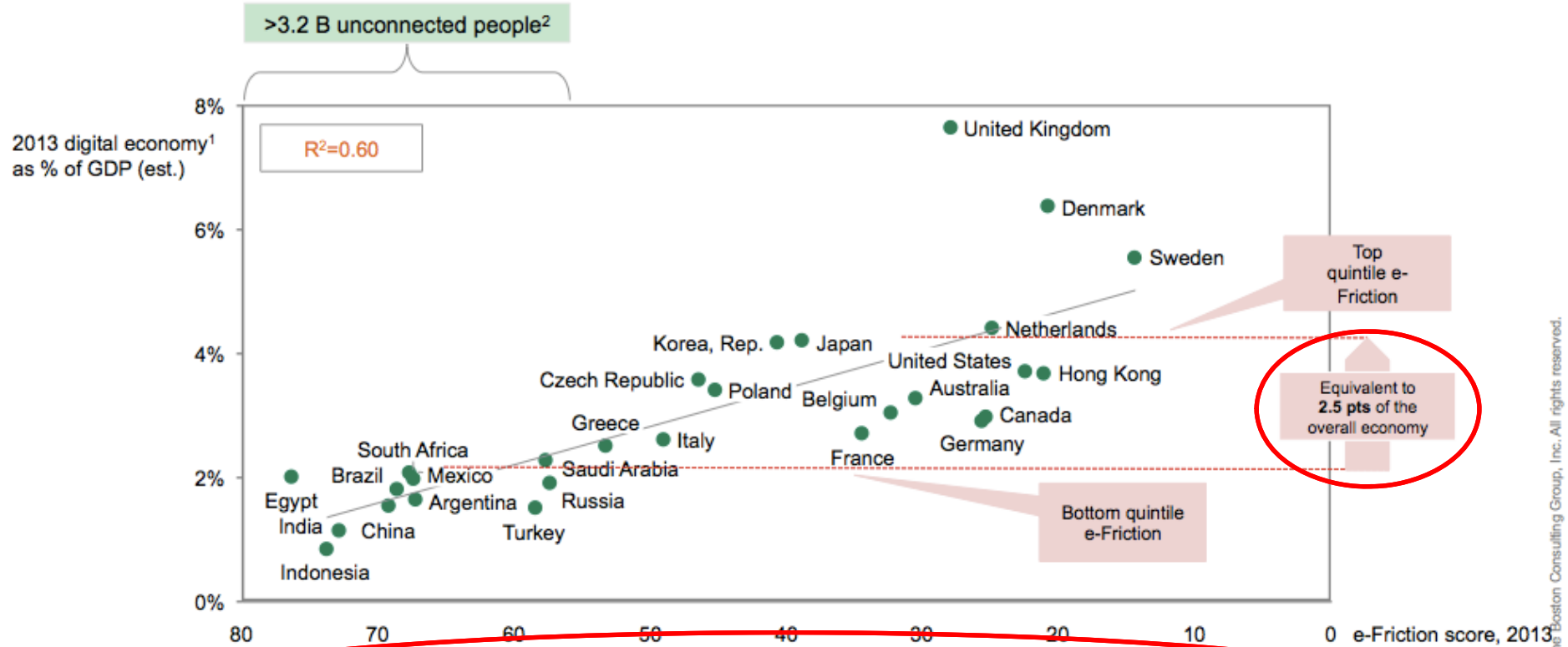
Country	e-Friction score	Infra-structure	Industry	Individual	Infor-mation
1. Sweden	14	15	15	10	16
2. Finland	17	21	16	8	14
3. Denmark	21	21	37	15	11
4. Switzerland	21	22	21	13	27
5. Hong Kong	21	18	9	22	43
6. United States	22	23	26	28	11
7. Iceland	22	17	34	36	14
8. Norway	23	25	26	14	20
9. Netherlands	25	28	21	13	30
10. Canada	25	32	28	13	15
11. Germany	26	28	35	17	18
12. United Kingdom	28	29	27	29	25
13. Austria	29	27	40	25	29
14. Australia	30	38	26	27	15
15. Singapore	31	30	9	25	66
16. Belgium	32	34	27	23	42
17. New Zealand	33	42	30	27	17
18. Ireland	34	34	41	36	24
19. France	34	38	33	26	32
20. Estonia	35	35	47	43	19
21. Japan	39	33	32	50	53
22. Israel	39	37	39	39	48
23. Qatar	40	51	19	23	44
24. UAE	41	45	25	33	49
25. Korea, Rep.	41	28	45	47	69
26. Slovenia	44	34	58	56	47
27. Bahrain	44	41	42	36	60
28. Malaysia	44	52	28	42	40
29. Poland	45	45	65	42	31
30. Portugal	45	43	43	49	51
31. Romania	46	29	81	70	35
32. Czech Republic	46	38	62	47	54

Country	e-Friction score	Infra-structure	Industry	Individual	Infor-mation
33. Spain	47	46	52	43	51
34. Panama	48	42	39	57	65
35. Hungary	48	47	62	59	30
36. Italy	49	42	64	62	41
37. Bulgaria	53	39	71	76	55
38. Greece	53	49	65	65	43
39. Ukraine	54	45	77	74	33
40. Kuwait	56	55	73	53	47
41. Chile	57	60	44	55	61
42. Jordan	57	53	48	67	69
43. Russia	57	49	73	59	66
44. Saudi Arabia	58	54	36	54	92
45. Turkey	58	52	60	59	76
46. Kazakhstan	64	58	70	61	76
47. Philippines	64	71	61	65	43
48. Thailand	64	61	59	63	81
49. Argentina	67	61	91	76	53
50. South Africa	67	75	50	63	68
51. Mexico	68	66	69	79	59
52. Brazil	69	67	71	71	68
53. China	69	73	56	66	75
54. Morocco	70	72	58	76	73
55. Venezuela	71	66	88	80	58
56. Colombia	71	72	76	75	61
57. Kenya	71	80	71	68	51
58. India	73	79	52	71	77
59. Indonesia	74	78	56	75	78
60. Peru	75	79	71	84	55
61. Vietnam	75	69	73	82	87
62. Bangladesh	75	74	86	90	53
63. Egypt	76	78	77	92	55
64. Pakistan	82	79	72	89	92
65. Nigeria	82	89	77	86	59

Top Bottom - Quintiles  
 Note: Best e-Friction available is 0, worst is 100

# e-Friction and GDP

Relationship between size of digital economy and e-Friction



Significant impact "beyond GDP": "ROPO", consumer surplus, C2C, SME growth, etc.

1. 2013 estimates interpolated from 2010 and 2011 actuals and 2016 forecast; 2. In the 85 countries covered.  
Source: BCG e-GDP model, BCG e-Friction model



# Reducing e-Friction

Which Wheels to Grease?

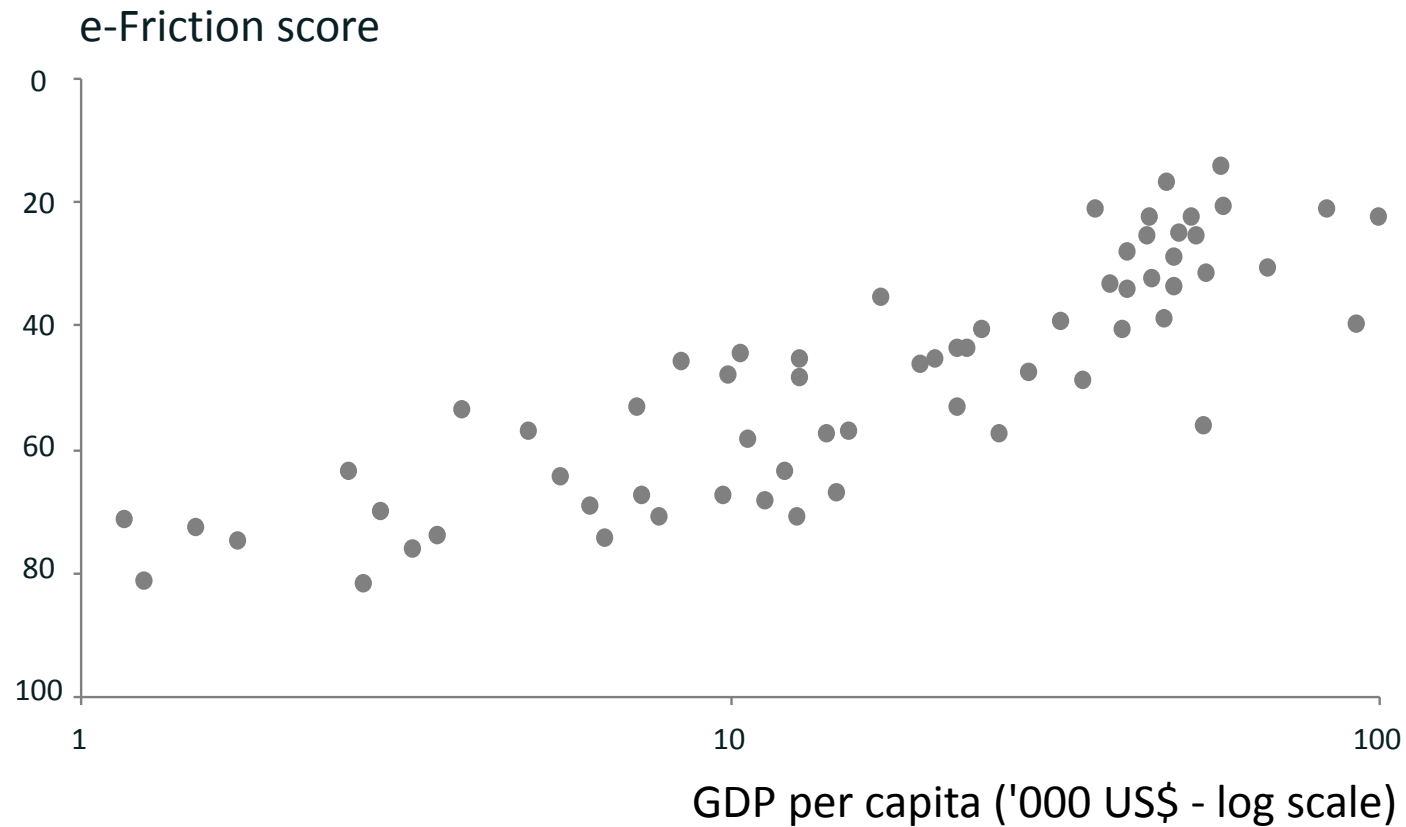
# “Which Wheels to Grease?”

An Agenda for Businesses and Policy makers

- 1 Do not see "**wealth** as destiny": many levers exist to reduce e-Friction, whatever the level of GDP
- 2 Drive for **literacy**: basic literacy, English-language skills and ICT skills all help reduce e-Friction
- 3 Encourage **local relevance**: local content in local languages drives usage, requiring encouragement of local ecosystems, including e-government services
- 4 **Get companies online**: SMEs that use the Internet intensively grow faster, employ more people than those that don't, and trade more internationally
- 5 **Population density** and large rural populations make infrastructure deployment more challenging, requiring important policy choices and technological experimentation
- 6 **Take holistic approach**. Encourage “joined-up” policy making, including multi-stakeholder involvement from across the ecosystem and learnings from relevant peers

# Wealth does not equal destiny

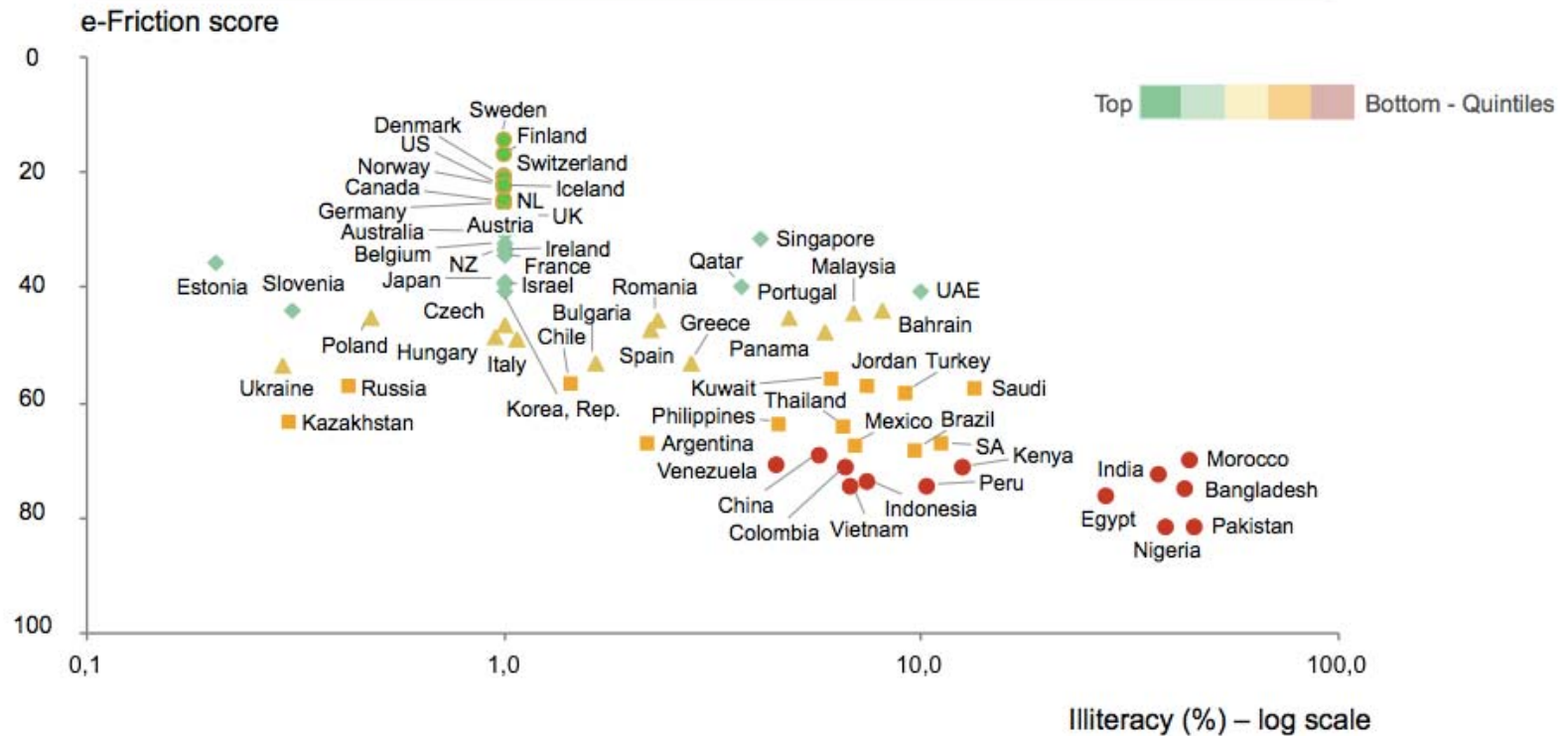
## e-Friction score vs. GDP per capita



**Wide spread of e-Friction scores at each wealth level**

# Literacy and Local Relevance

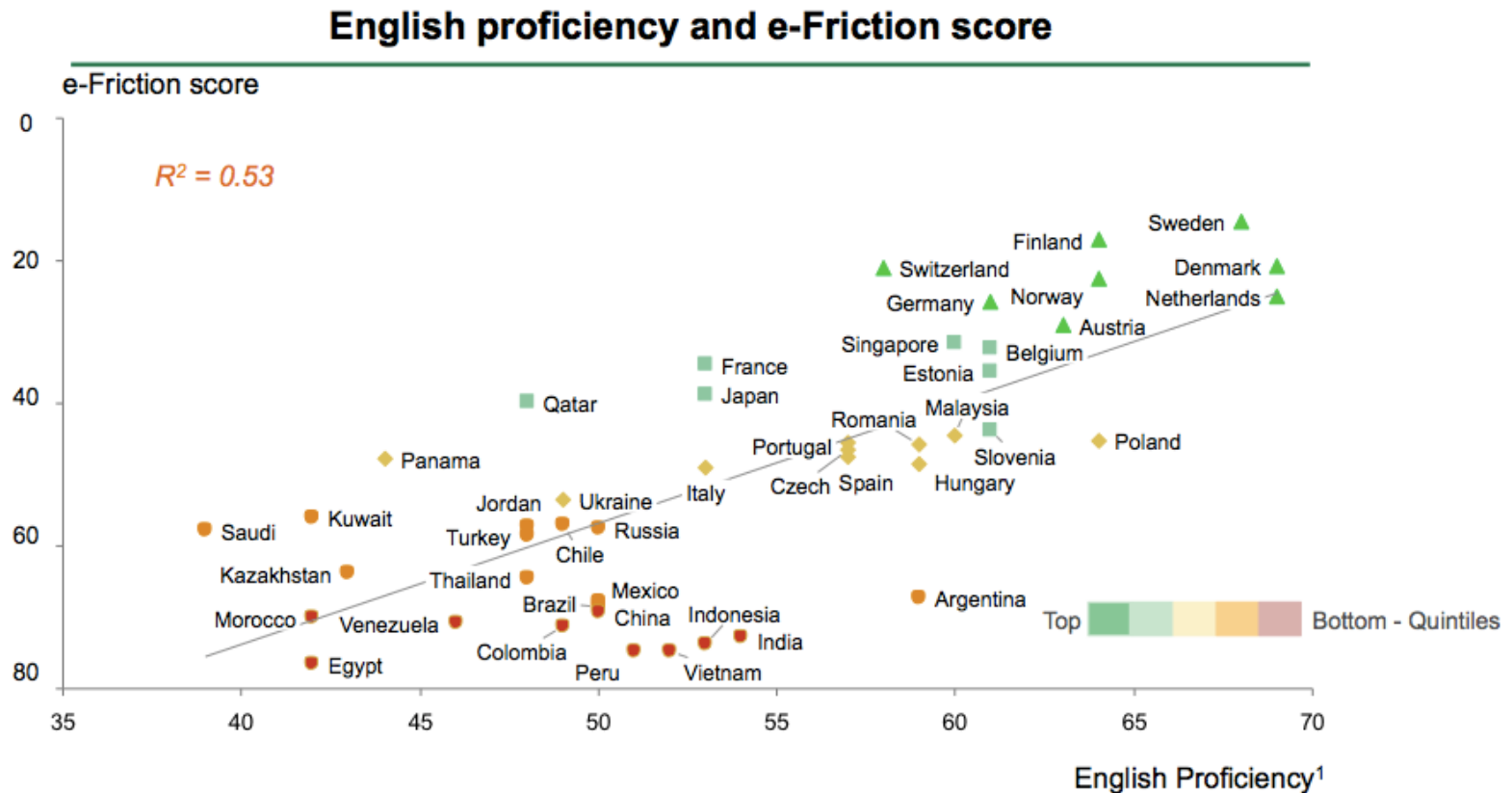
## Illiteracy and e-Friction score by e-Friction quintile



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**Over 98 percent of illiterate people can be found in countries with high or very high e-Friction – with over 800 million in predominantly rural countries**

# Literacy and Local Relevance (2)



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**Two interventions possible: enable the creation of more local language content, and/or support development of English-language skills**

pyr

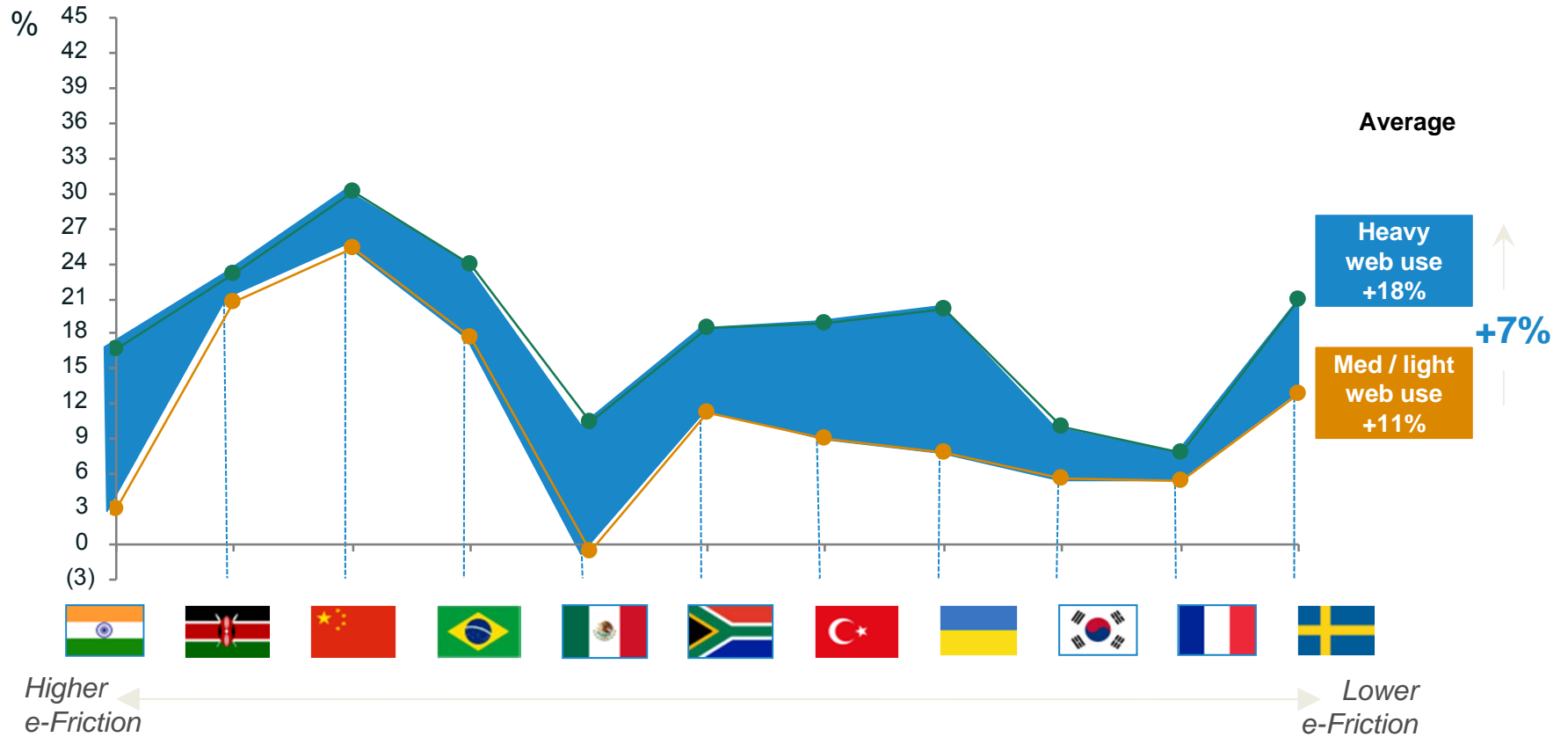


Source: World Bank GDP per capita (current US\$) year 2012. Bangladesh omitted on this chart as GDP per capita under \$1,000

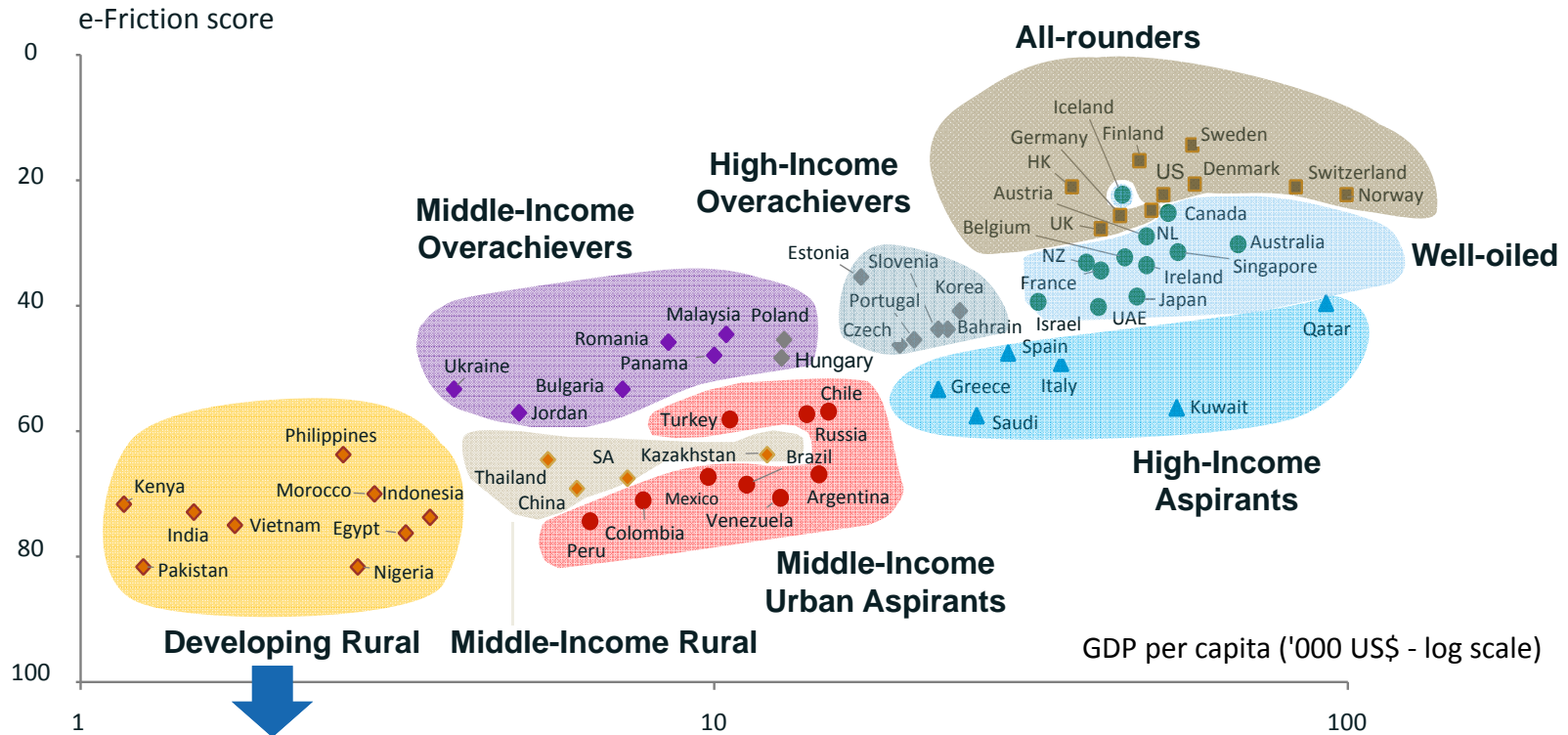


# The Internet and SMEs

Past three years  
Cumulative revenue growth



# Country clusters and actions – Developing Rural



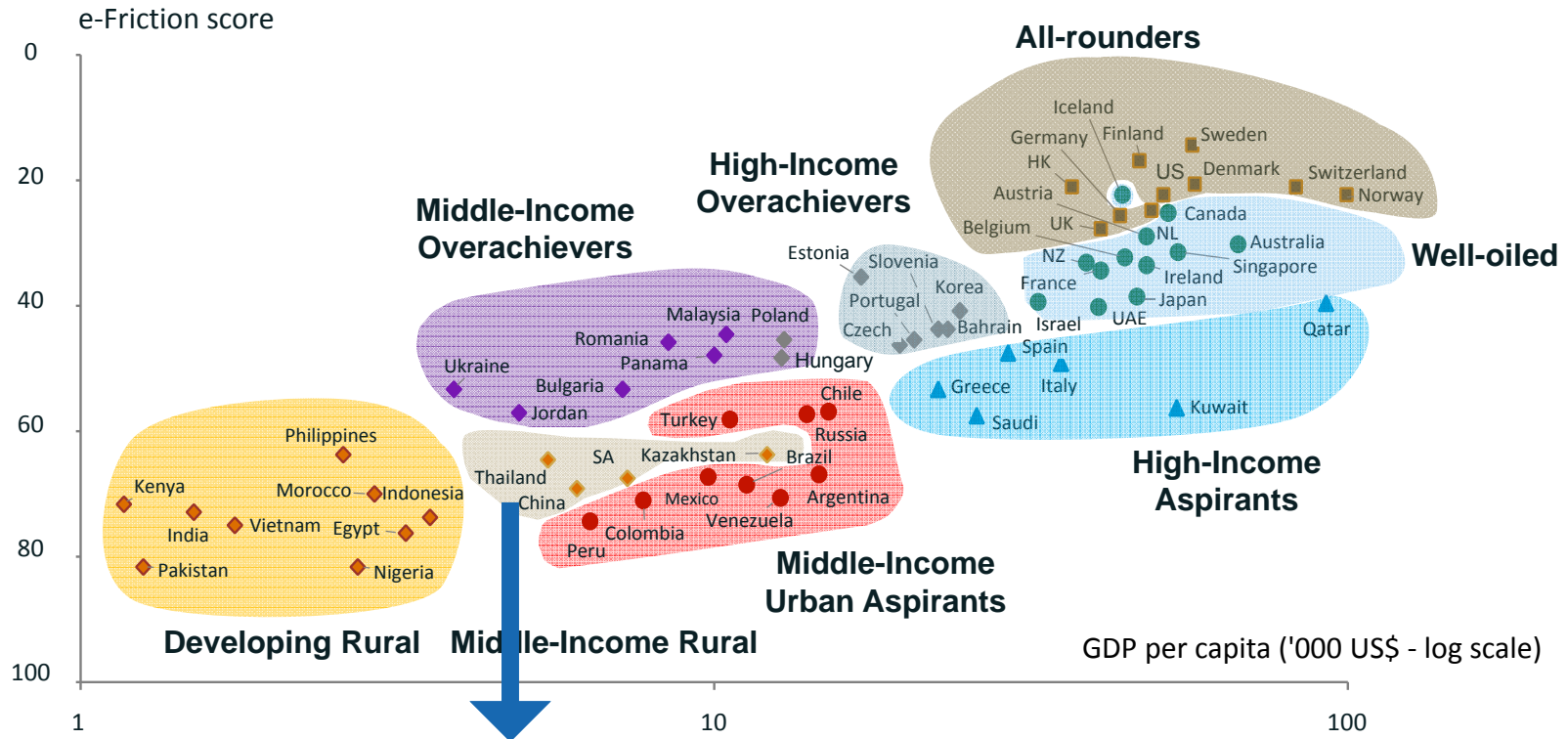
## Developing Rural

- GDP/Capita ca. \$1-4k
- High e-Friction for most components
- Predominantly rural population
- Examples: Indonesia, Philippines, Vietnam

## Proposed Actions

- Define coordinated set of interventions across multiple e-Friction components
- Drive for literacy: basic literacy, English and ICT skills
- Encourage local relevance: local content in local languages ; local ecosystems, including e-govt services
- Explore innovative approaches to infrastructure deployment

# Country clusters and actions – Middle-income Rural



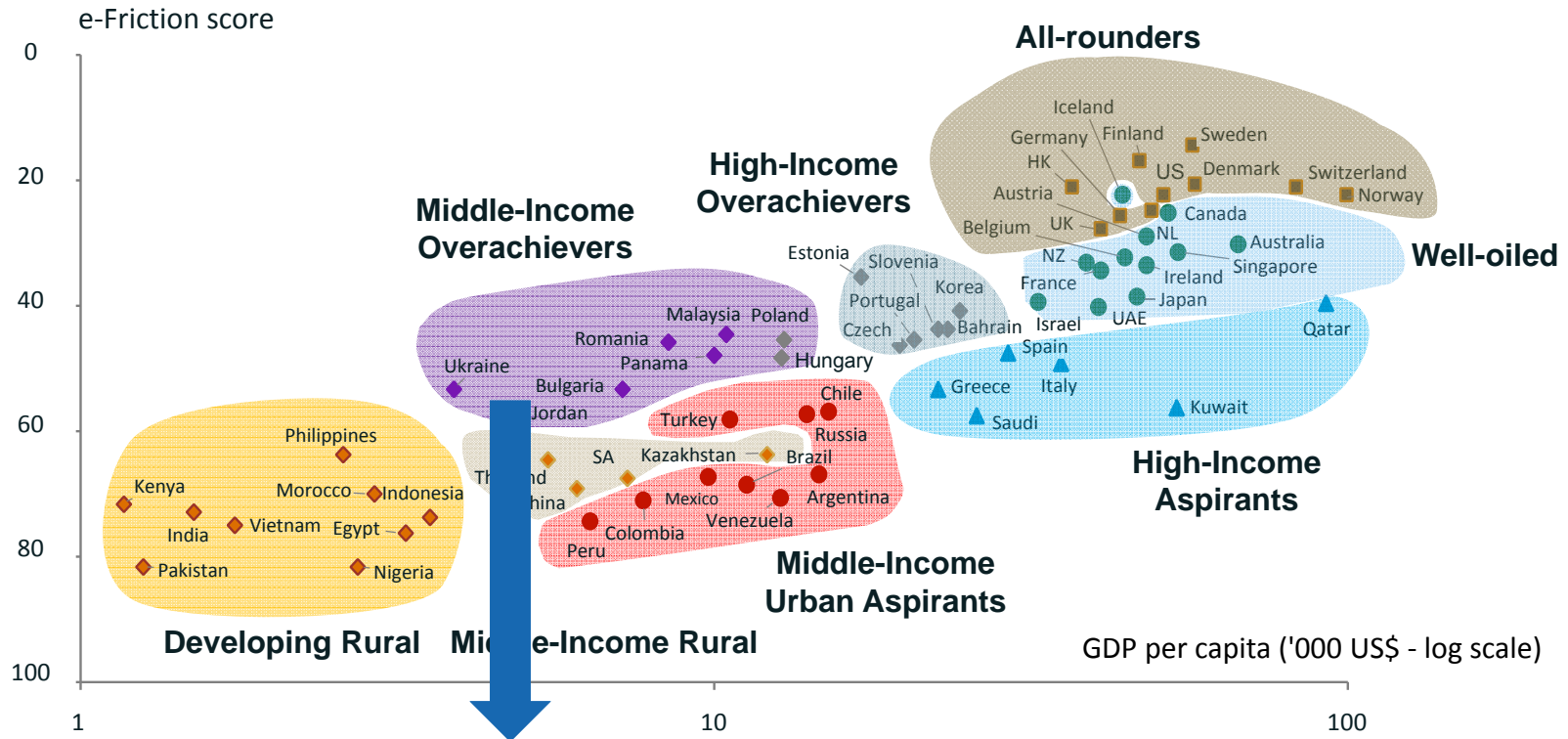
## Middle-Income Rural

- GDP/Capita roughly \$5-15k
- High e-Friction for several components<sup>4)</sup>
- High rural population (urban under ca. 60%)
- Mostly 3<sup>rd</sup>./4<sup>th</sup>. Quintile countries
- Examples: Thailand, China, S. Africa

## Proposed Actions

- Define coordinated set of interventions across multiple e-Friction components
- Explore innovative approaches to infrastructure deployment

# Middle-income overachievers



<h3>Middle-Income overachievers</h3>	<ul style="list-style-type: none"> <li>• GDP/Capita \$4-10k</li> <li>• Generally moderate e-Friction across components<sup>3)</sup></li> <li>• Mostly 3<sup>rd</sup>. Quintile countries</li> <li>• Examples: Malaysia, Romania, Jordan</li> </ul>	<h3>Proposed Actions</h3>	<ul style="list-style-type: none"> <li>• Define multiple focused interventions for each underperforming component of e-Friction</li> <li>• Industry and/or Individual friction in many cases most in need of addressing</li> </ul>
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# Holistic approach – Strategize



Prioritise which eFriction source to address; develop strategy together

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# Engage with ICANN



## Thank You and Questions

Email: [jiarong.low@icann.org](mailto:jiarong.low@icann.org)

Website: [icann.org](http://icann.org)

BCG Report: <http://goo.gl/lmBDtr>

<http://goo.gl/91NkW8>



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