Broadband Quality Score III
A global study of broadband quality

"All for Broadband – Broadband for All"
Budapest, 3rd March 2011

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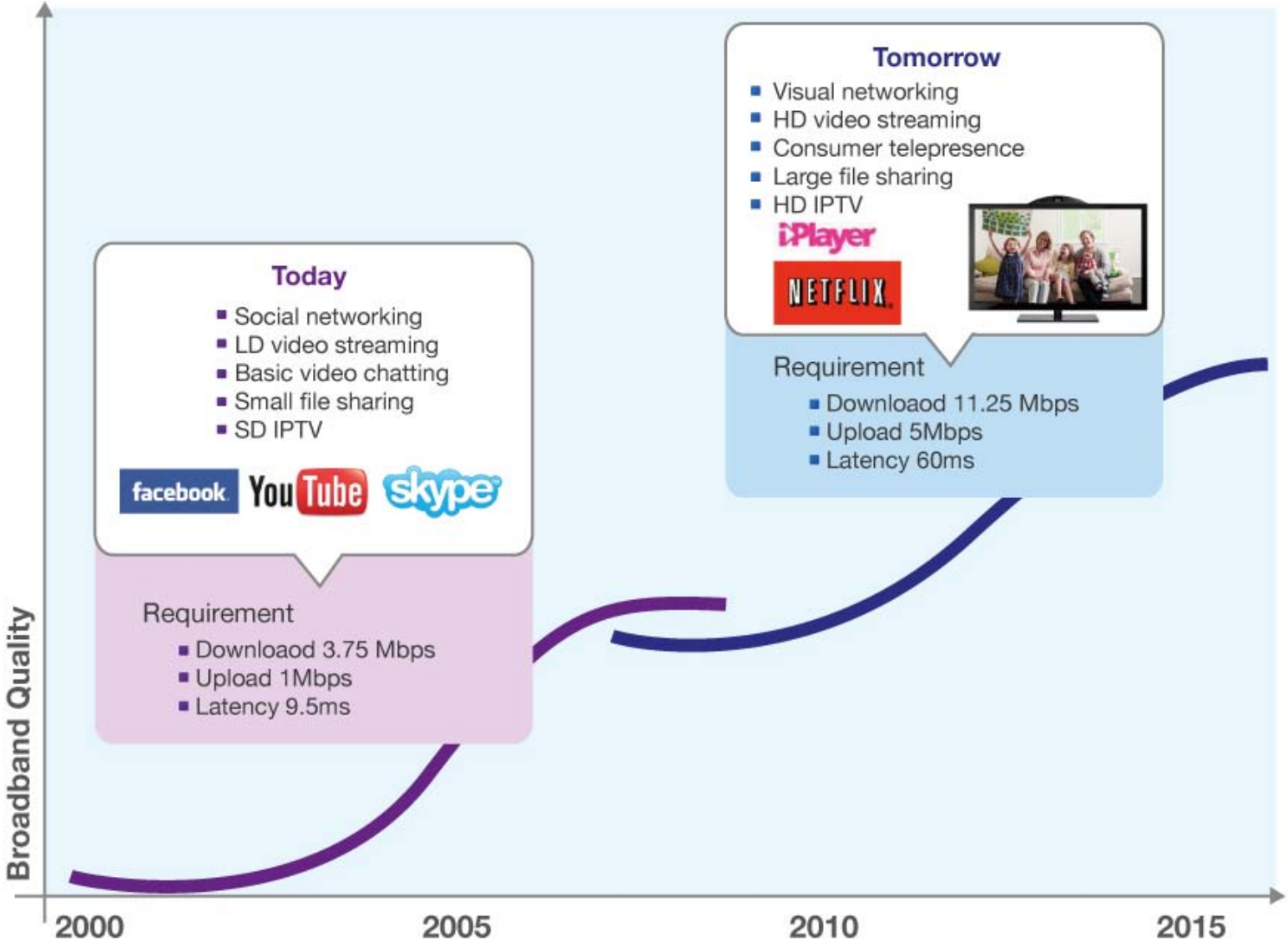
Changing Quality Requirements



BQS2010, Application Readiness

14 countries already prepared for the Internet "applications of tomorrow" compared to only 1 country in 2008

Broadband Leadership: Ranking 2010 and 2009

South Korea, already the leader lat year, has made the biggest jump in Broadband Quality in 2010.

Ranking	Broadband Leadership 2010	Broadband Leadership 2009
1	South Korea	South Korea
2	Hong Kong	Singapore, Qatar
3	Japan	Hong Kong
4	Iceland	Iceland
5	Switzerland, Luxemburg, Singapore	Switzerland, Singapore
6	Malta	Netherlands
7	Netherlands	Japan
8	United Arab Emirates, Qatar	Sweden
9	Sweden	Denmark, Norway
10	Denmark	Malta

Broadband Leadership: All Countries 2010

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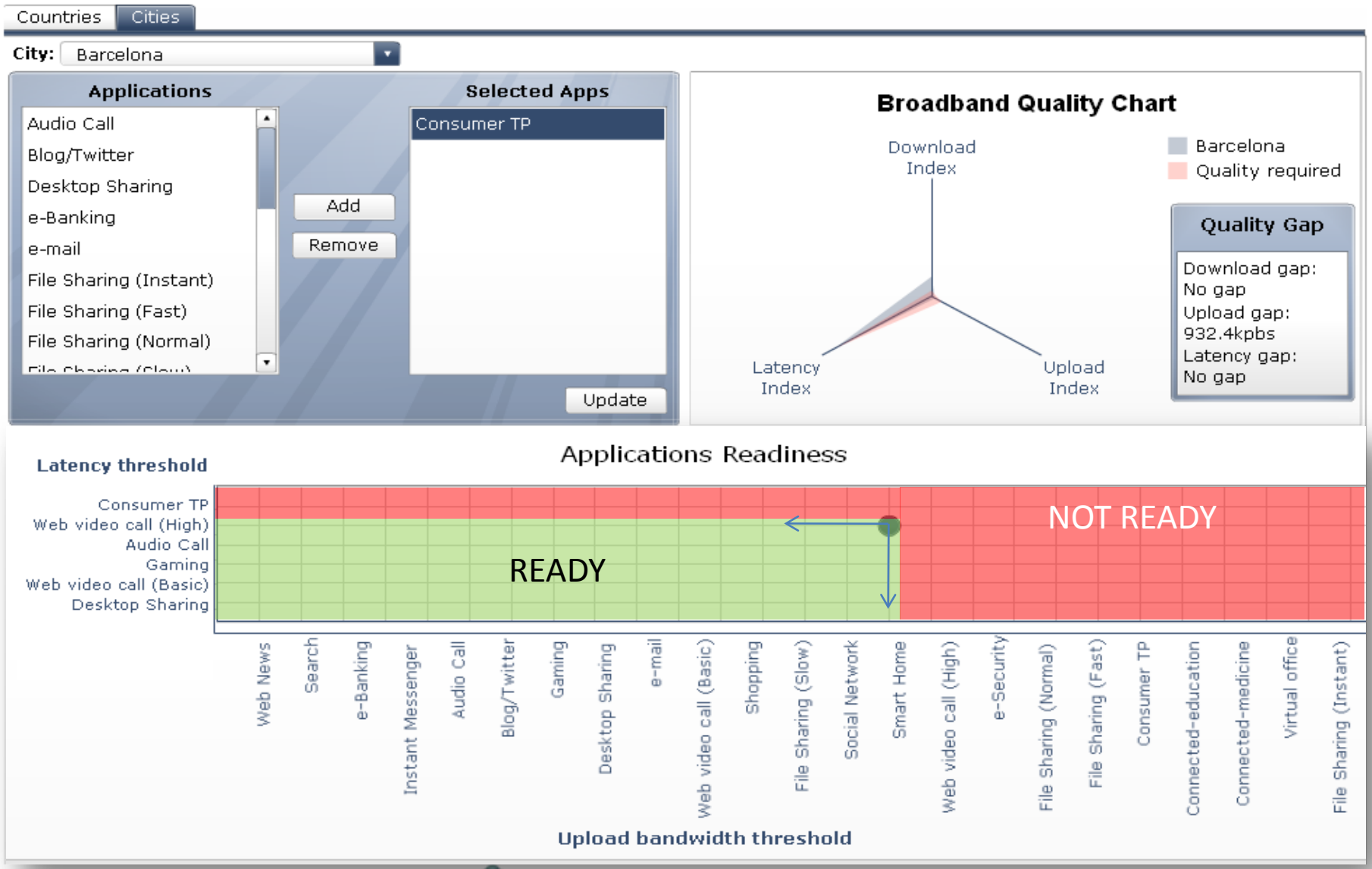
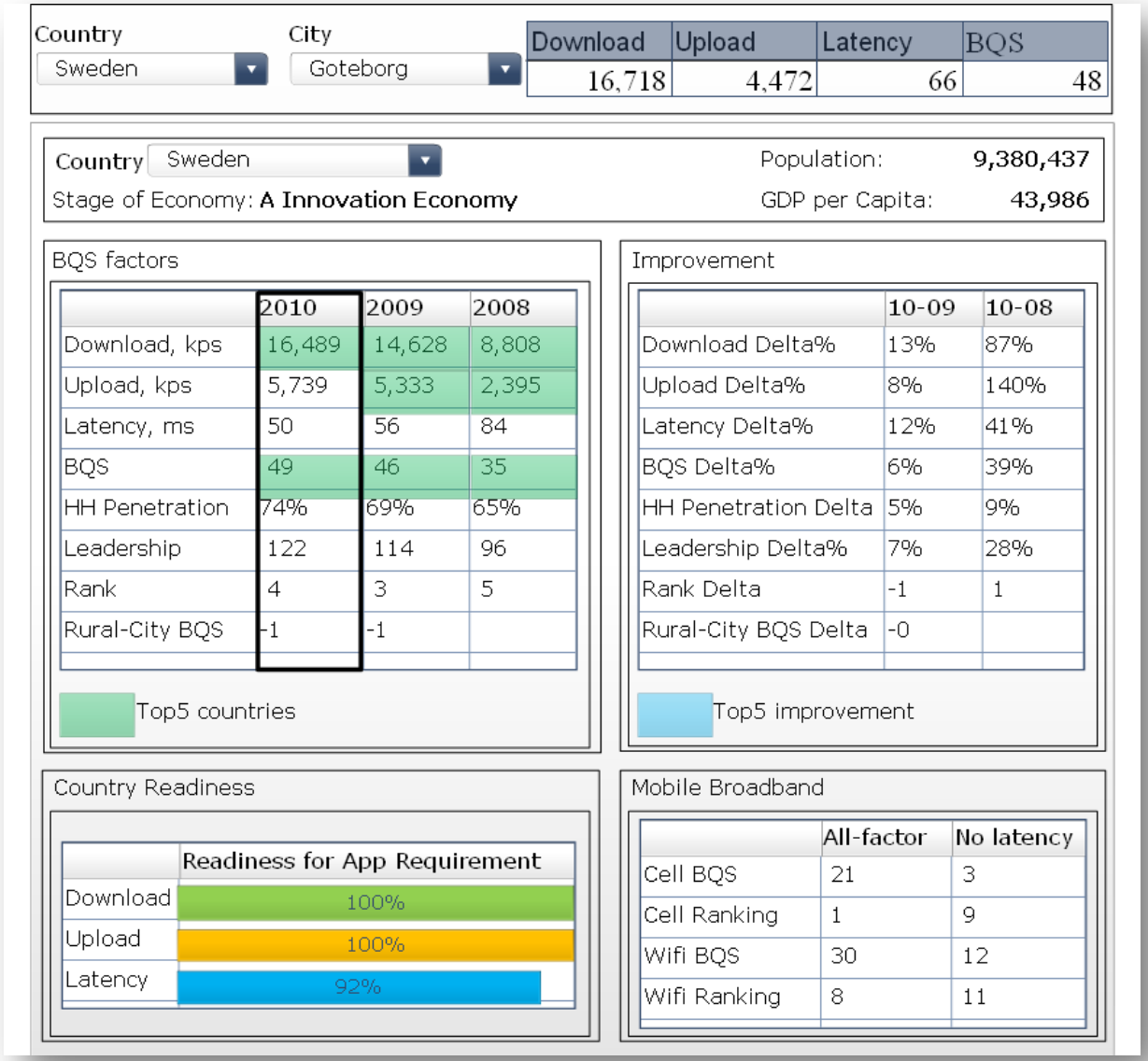
Country and City Readiness



Country Dashboards



Country: Sweden | City: Goteborg

Download	Upload	Latency	BQS
16,718	4,472	66	48

Country: Sweden
Stage of Economy: **A Innovation Economy**
Population: **9,380,437**
GDP per Capita: **43,986**

BQS factors

	2010	2009	2008
Download, kps	16,489	14,628	8,808
Upload, kps	5,739	5,333	2,395
Latency, ms	50	56	84
BQS	49	46	35
HH Penetration	74%	69%	65%
Leadership	122	114	96
Rank	4	3	5
Rural-City BQS	-1	-1	

Top5 countries

Improvement

	10-09	10-08
Download Delta%	13%	87%
Upload Delta%	8%	140%
Latency Delta%	12%	41%
BQS Delta%	6%	39%
HH Penetration Delta	5%	9%
Leadership Delta%	7%	28%
Rank Delta	-1	1
Rural-City BQS Delta	-0	

Top5 improvement

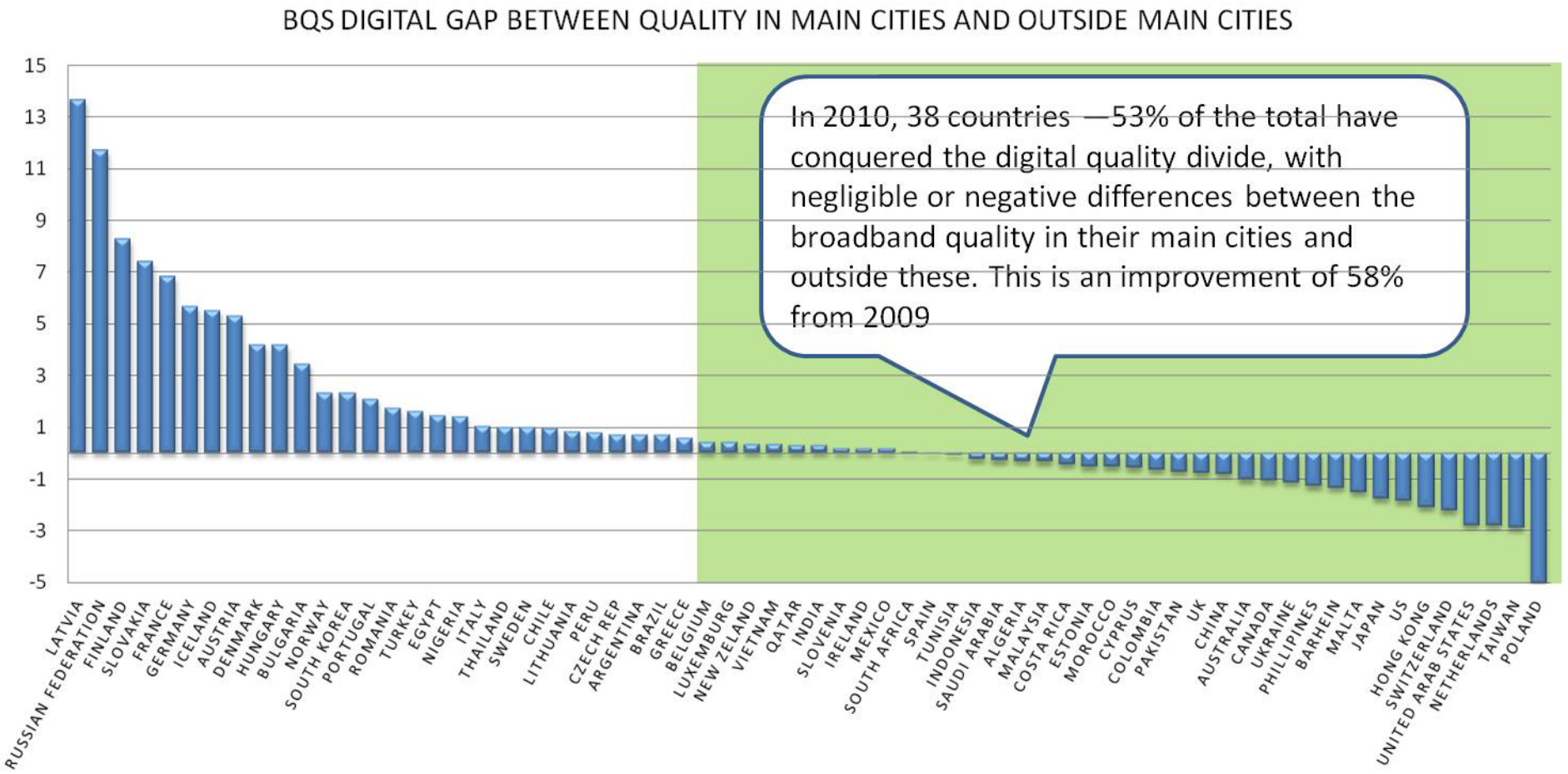
Country Readiness

	Readiness for App Requirement
Download	100%
Upload	100%
Latency	92%

Mobile Broadband

	All-factor	No latency
Cell BQS	21	3
Cell Ranking	1	9
Wifi BQS	30	12
Wifi Ranking	8	11

Quality Digital Gap 2010



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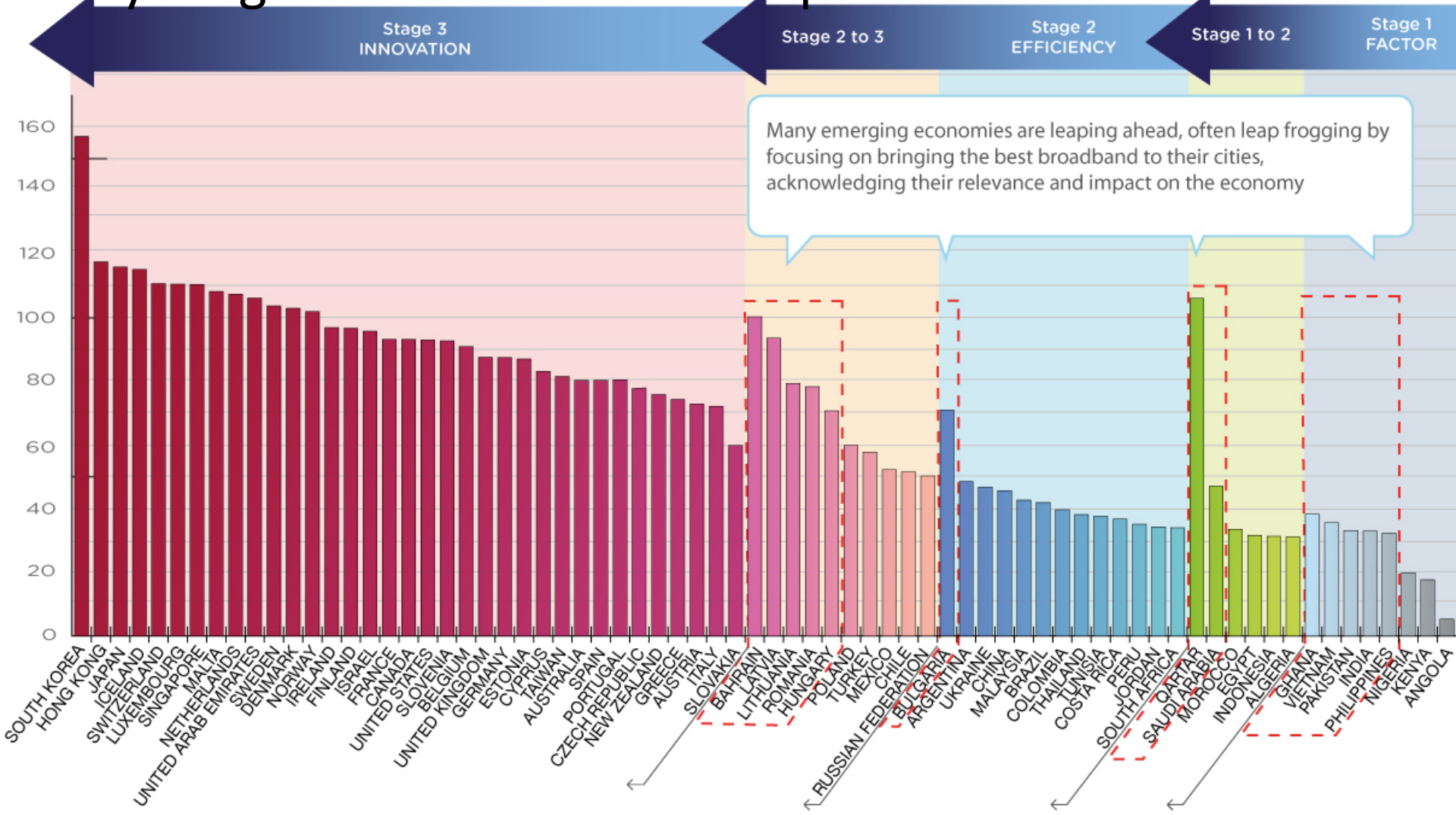
2010 Broadband Leadership
By Stage of Economic Development



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City Rankings by BQS: Ready for Tomorrow

Ready for Tomorrow		
Seoul	Den Haag	Reikjavik
Nagoya	Bucharest	Bratislava
Yokohama	Vilnius	Moscow
Osaka	Rotterdam	Amsterdam
Riga	Kaunas	Budapest
Tokyo	Helsinki	Lyon
Uppsala	Paris	Oulu
Malmo	Copenhagen	New York
Hamburg	Kowloon	Marseille
Goteborg	Hong Kong	Prague
Sofia	Kharkov	Espoo
Koln	Lisbon	Tampere
Kosice	Porto	Munchen
Stockholm	Saint Petersburg	

There are already 41 cities with the quality required to be “smart and connected”. Europe leads with 21 cities in Western Europe, and 12 in Eastern Europe; Asia follows with 7 cities, and the USA has 1. Seoul tops the list and Japan has the most cities with the highest average quality.

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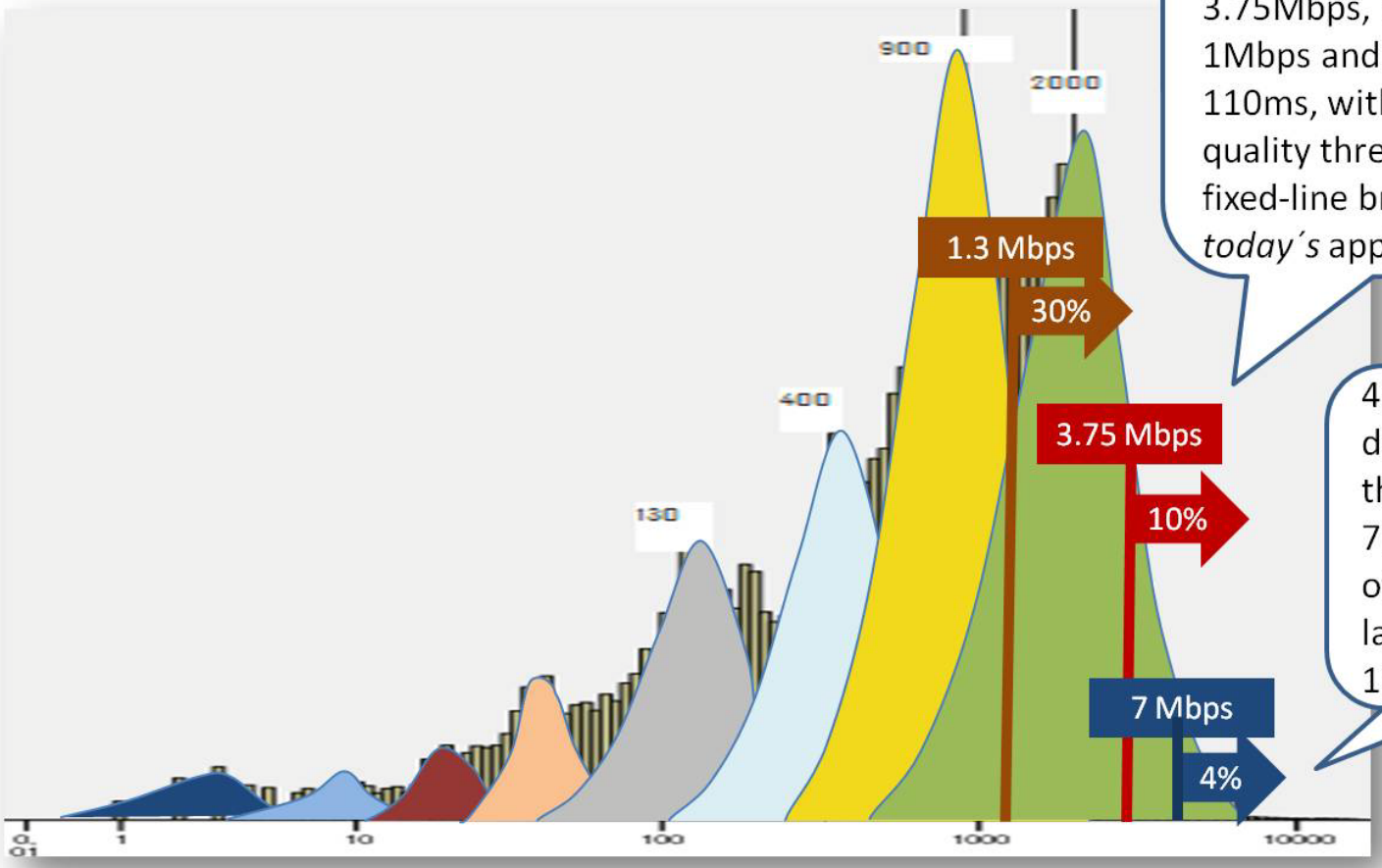
Mobile Broadband Quality: Difference Between Technologies



10% of mobile broadband users enjoy average download throughputs of 3.75Mbps, uploads of ca. 1Mbps and latency below 110ms, with similar quality thresholds than fixed-line broadband for *today´s* applications

4% have average download throughputs of 7Mbps, uploads of 1.7Mbps and latencies below 100ms

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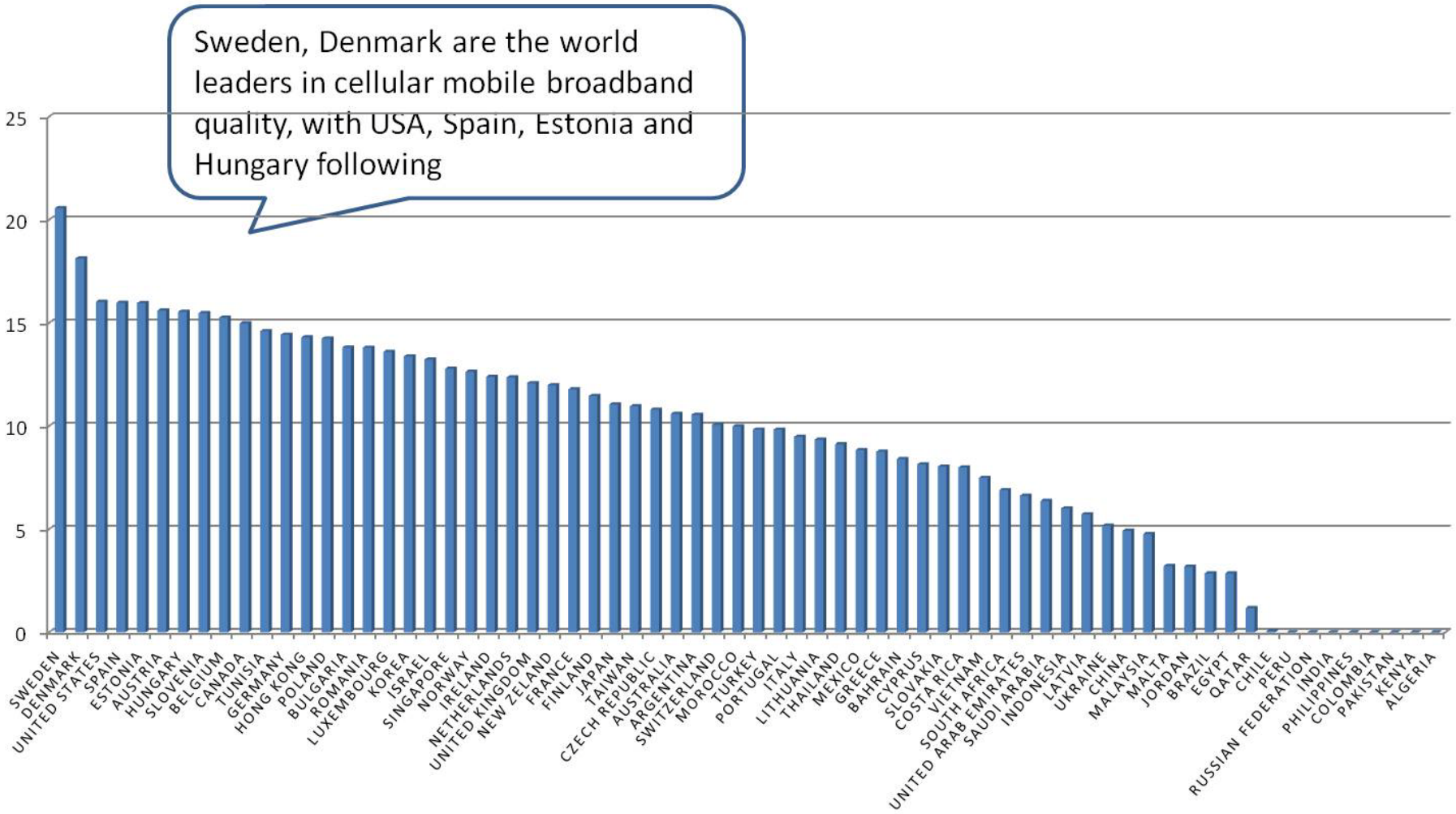
Mobile Broadband BQS by Country



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Basic Digital Household

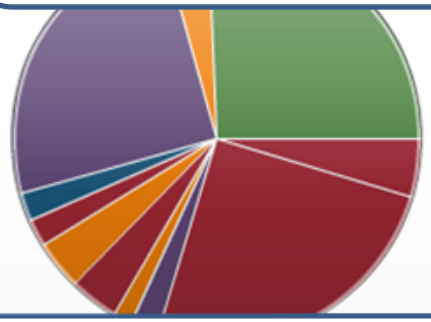
Patterns of broadband consumption are diverging and will continue to do so in the future. This has many implications for regulators and SPs.

1 Day Online Behavior

Audio Call	0 Hour	Instant Messenger	3 Hour
Blog/Twitter	0.25 Hour	Web News	0.25 Hour
Consumer TP (720p)	0 Hour	Consumer TP (1080p)	0 Hour
Desktop Sharing	0 Hour	Search	0.5 Hour
e-Banking	0 Hour	Shopping	0 Hour
e-mail	3 Hour	Social Network	0.5 Hour
File Sharing (Instant)	0 Files	Web video call (Basic)	0.25 Hour
File Sharing (Fast)	0 Files	Web video call (High)	0 Hour
File Sharing (Normal)	3 Files	Video Streaming(360p)	0 Hour
File Sharing (Slow)	2 Files	Video Streaming(480p)	0.5 Hour
Gaming	0.5 Hour	Video Streaming(720p)	0 Hour
Connected-education	0 Hour	Video Streaming(1080p)	0 Hour
Connected-medicine	0 Hour	Virtual office	0 Hour
e-Security	0 Hour	Smart Home	0 Hour

Traffic consumption

In 1 day:
675 MB
In 1 month:
20,242 MB

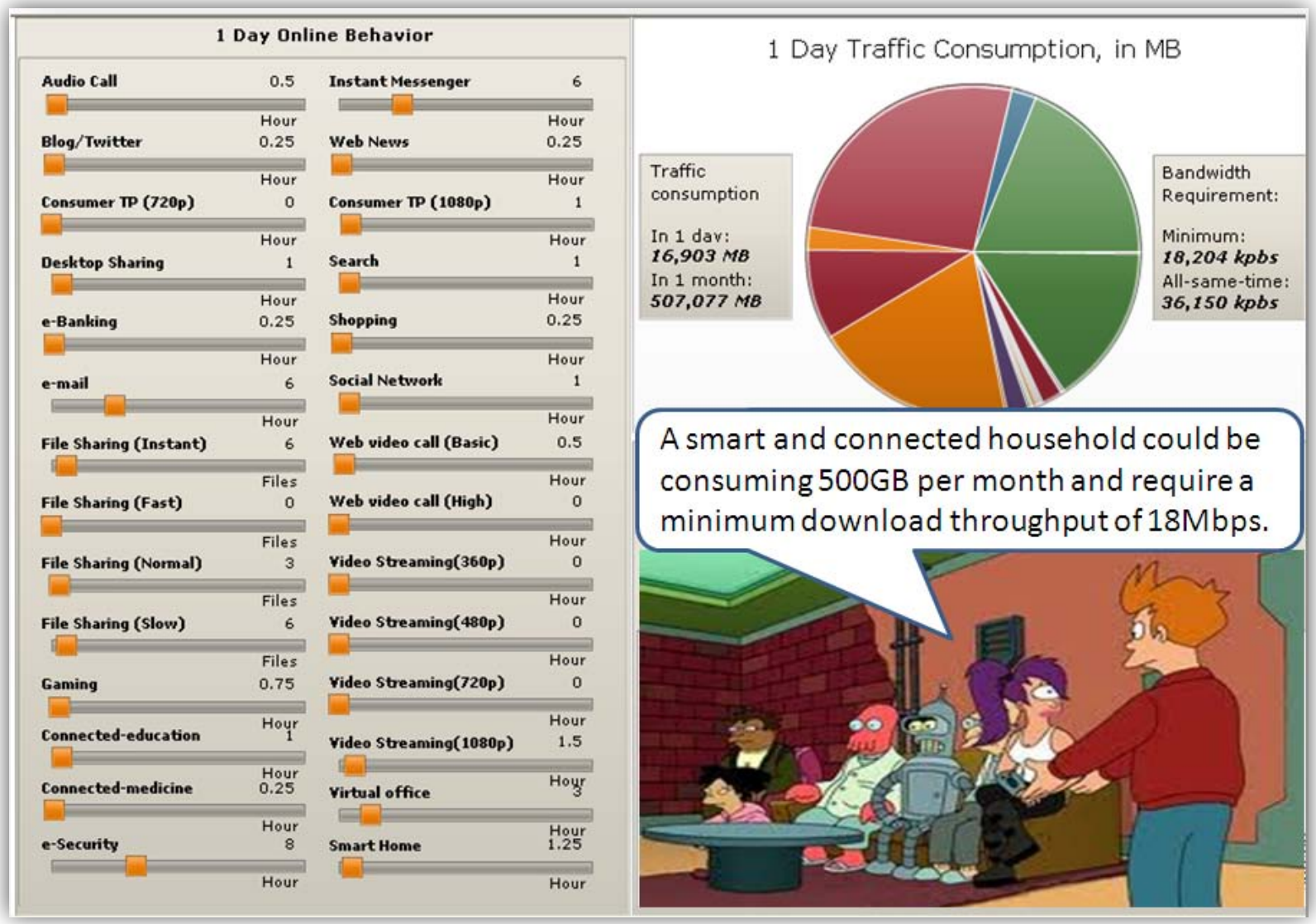


Bandwidth Requirement:

Minimum:
2,731 kpbs
All-same-time:
6,182 kpbs

A very basic digital household with simple quality requirements will be consuming about 20GB per month, and would require a minimum download throughput of 2.7Mbps.

Smart and Connected Household



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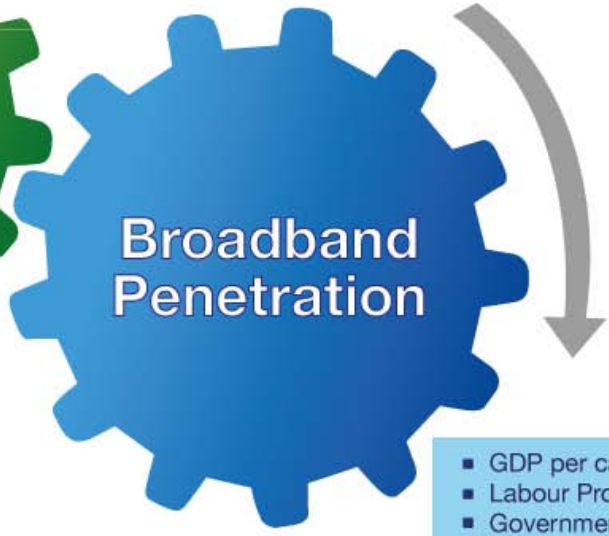
2010: Impact of Quality and Penetration

The study reaffirms the positive link between broadband leadership and the innovation economy

- Country competitiveness
- Knowledge economy
- Capability for Innovation
- Economy incentive regime
- High levels of education
- Internet access in the schools

- Percentage of fibre and cable
- Web usage
- Improvements in education quality
- Tertiary education enrolments
- Government online services
- Utility of patents
- Female participation in workforce



- GDP per capita
- Labour Productivity
- Government ICT agenda
- Level of economic freedom
- ICT laws in place
- Company spending in R&D
- Low economic inequality
- Government procurement
- Absorption of technology

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