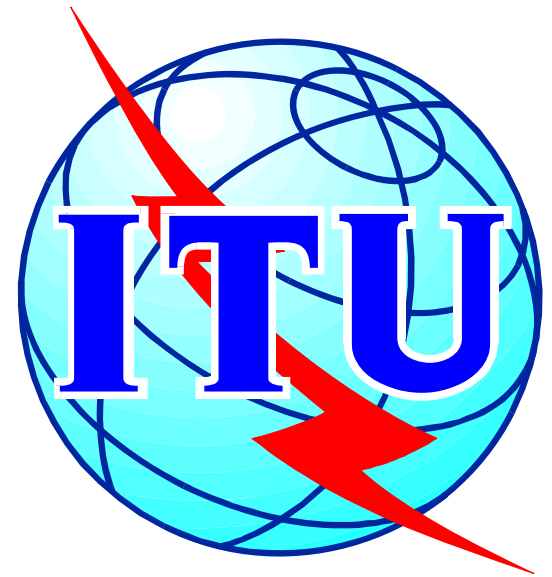


Emerging policy and regulatory challenges of Next Generation Networks (NGN)

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Agenda: NGN Policy and Regulatory Challenges

- **Why NGN?**

- **Why should we migrate from today's networks to tomorrow's NGN?**
- **Where does Ireland rank?**

- **Today's trends**

- **Telcos still heavily dependent on voice revenues**
- **But, the trend is towards bundling and flat-rate pricing**
- **Voice revenues will drive NGN investment**

- **Regulatory challenges**

- **Investment incentives versus unbundling**
- **Complexity versus simplicity**
- **Mobile versus fixed termination**
- **IP versus PSTN call termination**



What is an Next Generation Network?

Today's PSTN network	Next Generation Networks
<ul style="list-style-type: none">• Circuit-switched.	<ul style="list-style-type: none">• Packet-based, based on Internet Protocol (IP).
<ul style="list-style-type: none">• Limited mobility of end-user services.	<ul style="list-style-type: none">• Broad-based 'generalised mobility'.
<ul style="list-style-type: none">• Vertical integration of application and call control layers, with dedicated networks.	<ul style="list-style-type: none">• Horizontally-integrated control layers, with simultaneous delivery of applications. Service-related functions independent of transport-related technologies.
<ul style="list-style-type: none">• Non-responsive network.	<ul style="list-style-type: none">• NGN will be able to identify and adapt to user needs in real-time.



But, doubts persist over NGN

- **NGN represents the marriage of the Telco and IP worlds. But will it be a collision?**
- **Is the NGN just another a telco attempt to recreate an “Intelligent Network” with centralised intelligence?**
- **Is the NGN primarily an overlay or a new-build?**
- **Is it just a clever marketing name?**
- **Who pays for what, where, when and to whom in an NGN environment?**



So, what might be the benefits of a Next Generation Network?

- **For the Operator:**

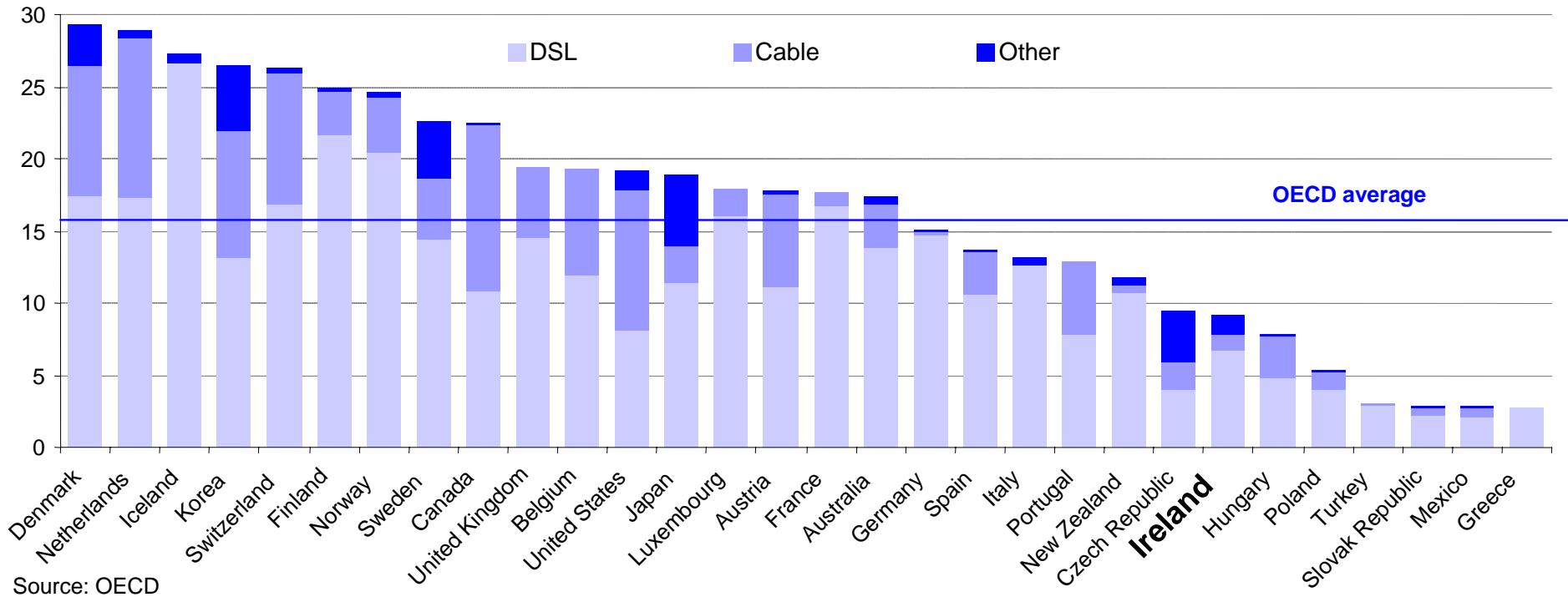
- Lower costs in having a single IP-based network to invest in and maintain, and fewer switching locations
- Single billing contact with the customer (*“internet with billing”*) and interface for 3rd party content providers
- Possibility to offer multiple play (voice, video, data etc) and faster time to market for new service roll-out

- **For the customer:**

- Possibility to use the same customised environment between different platforms
- Possibility of lower prices through bundled service offerings
- Integration of user-generated content (e.g., photos, music and video library, website) with that of service provider

Where does Ireland fit? (Broadband penetration)

OECD Broadband subscribers per 100 inhabitants, by technology, June 2006



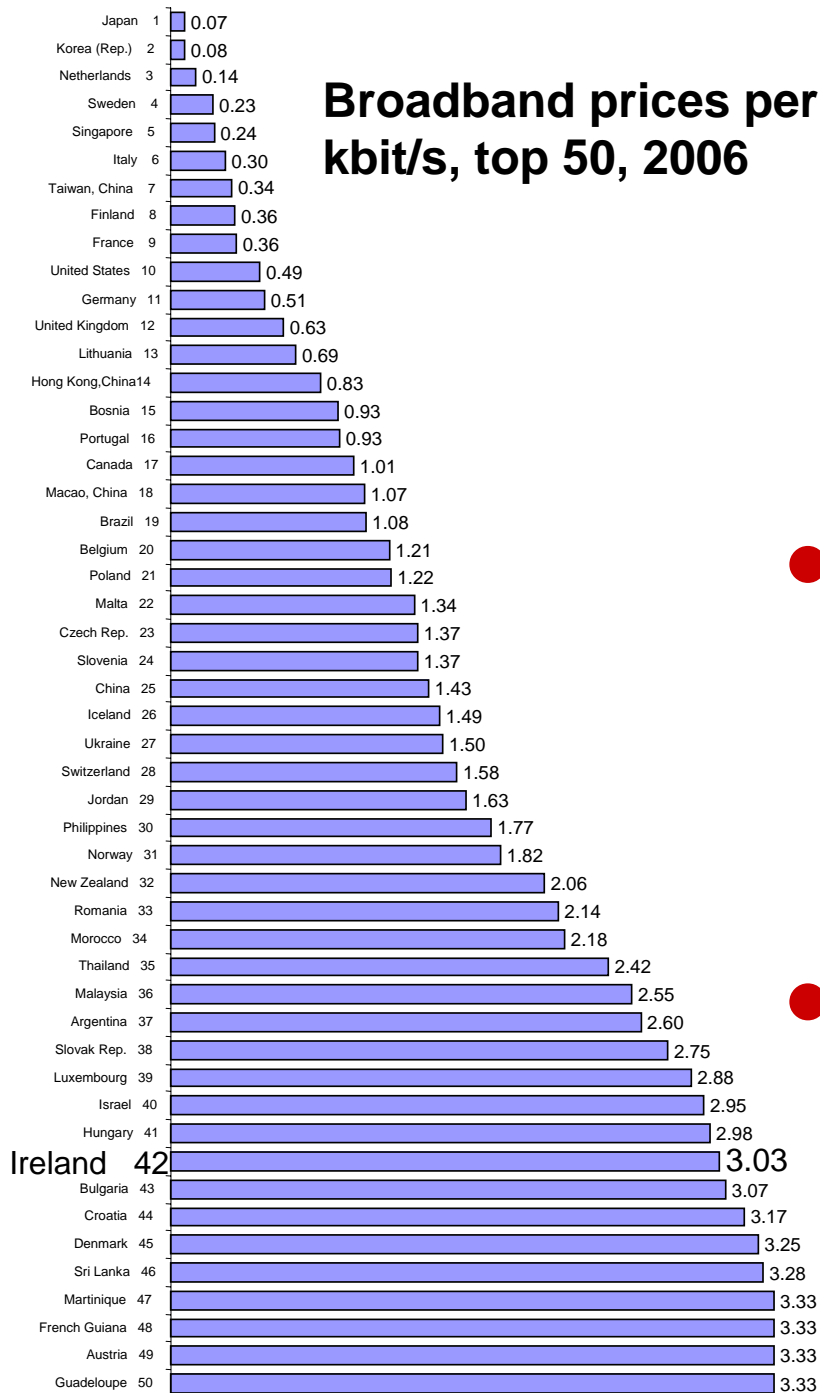
Source: OECD

● Broadband penetration:

- Within OECD, ranked 24th out of 30 economies, June 2006
- 14th fastest growing OECD economy, Q2 2005 – Q2 2006
- Global level, ranked 36th out of 206 economies, Dec 2005

Where does Ireland fit? (Broadband prices)

Broadband prices per 100 kbit/s, top 50, 2006



● Broadband prices:

- Within OECD, ranked 22nd most expensive (per 100 kbit/s) out of 30 economies, August 2006
- Global level, ranked 42nd out of 206 economies, August 2006

● Digital Opportunity Index

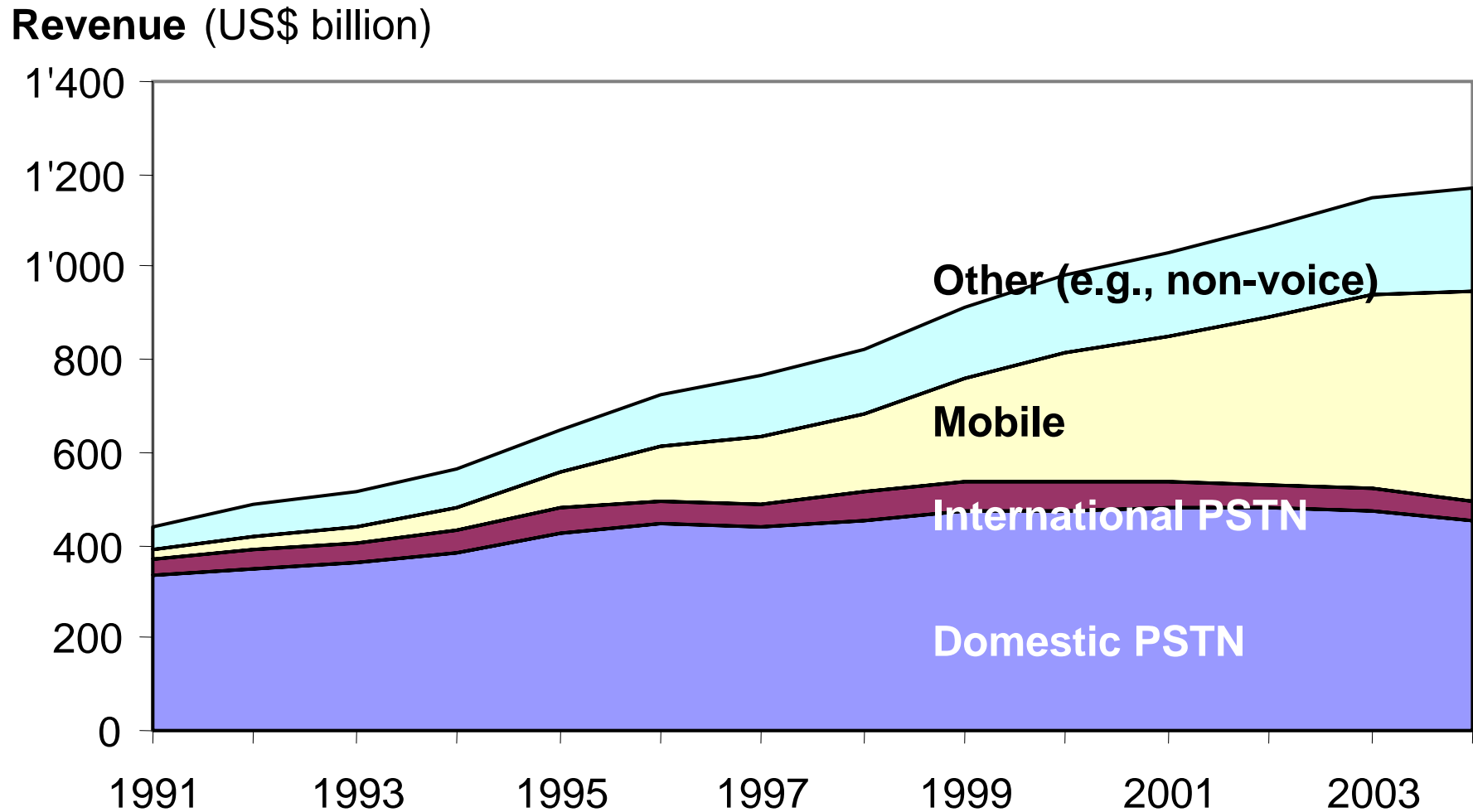
- In ITU/UNCTAD composite “Digital Opportunity Index”, Ireland ranks 31st in 2006 of 180 economies (same as in 2005)



Some regulatory challenges of NGNs

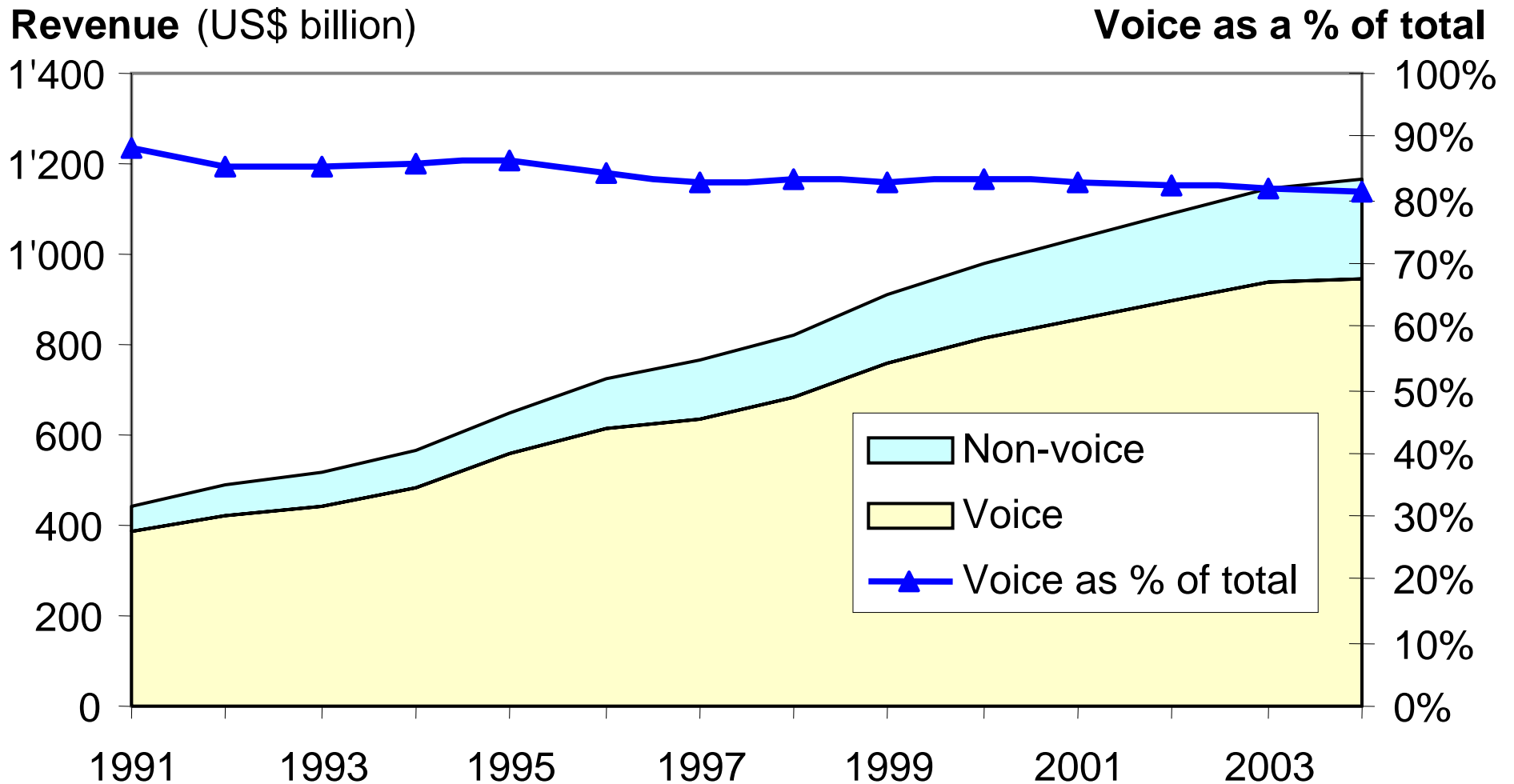
- **Pricing:** Will NGN offer prices that are significantly lower than those available today?
- **Bundling and billing:** How to distinguish real price of bundled services (predatory pricing)?
- **Interconnection:** Will current interconnection models (based on per-minute settlement) work in an NGN?
- **Security:** If much greater capacity is available at the edges of the network, how to guarantee security?
- **Investment:** Will unbundling discourage new infrastructural investment?
- **Traffic prioritisation:** Is the Net really “neutral”?
- **Emergency services:** What level of universal service obligation to impose?
- **Competition policy:** Significant market power will not go away in an NGN environment
- **Consultation:** compensation for stranded assets?

Long-term telecom revenue trends



Source: ITU Information Society Statistics Database.

Nevertheless, voice revenues are relatively stable as % of total telco revenue

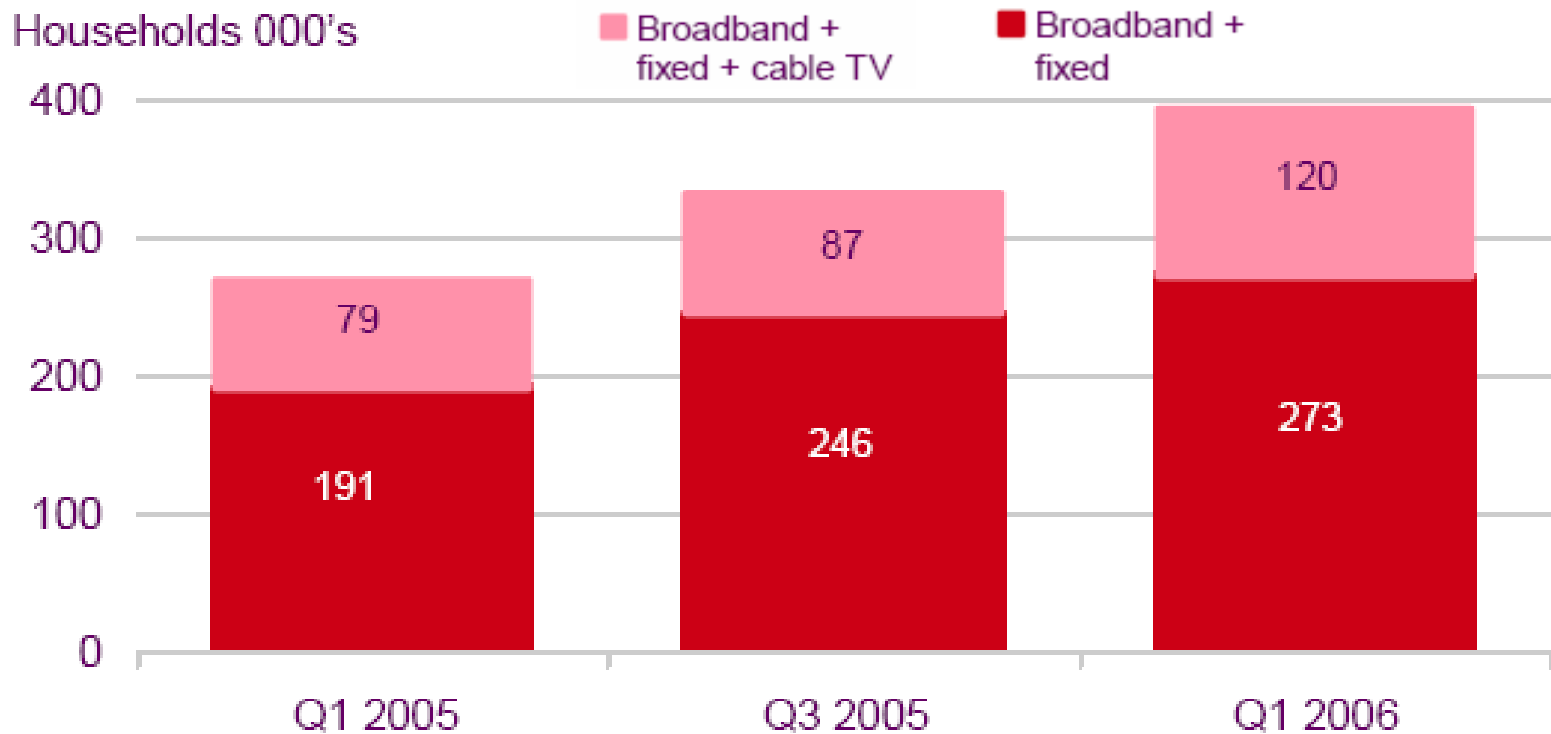


Source: ITU Information Society Statistics Database.



The trend towards bundling

UK households taking bundled packages

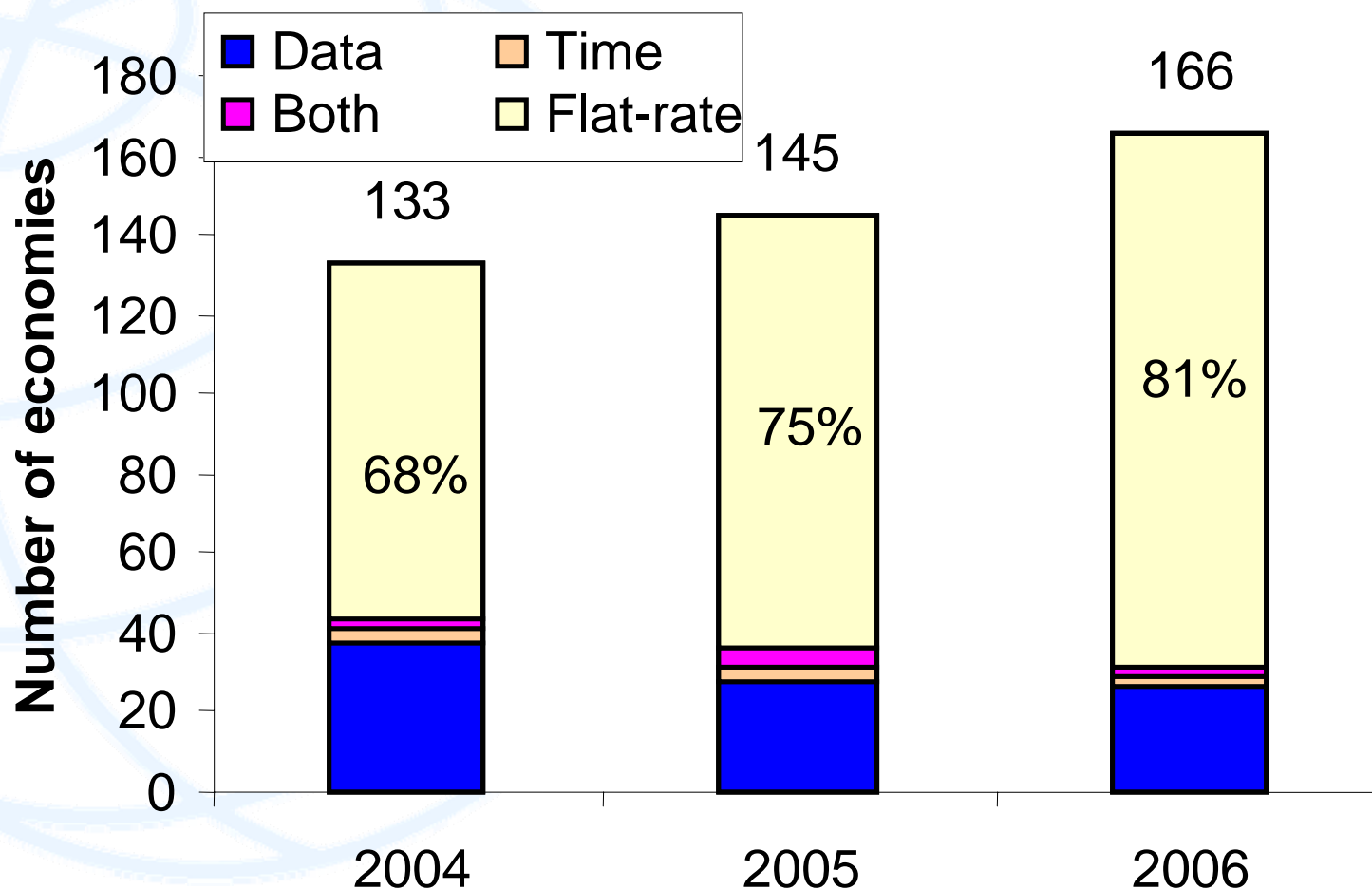


Source: OFCOM



The trend towards flat-rate pricing

Global trends in broadband pricing schemes

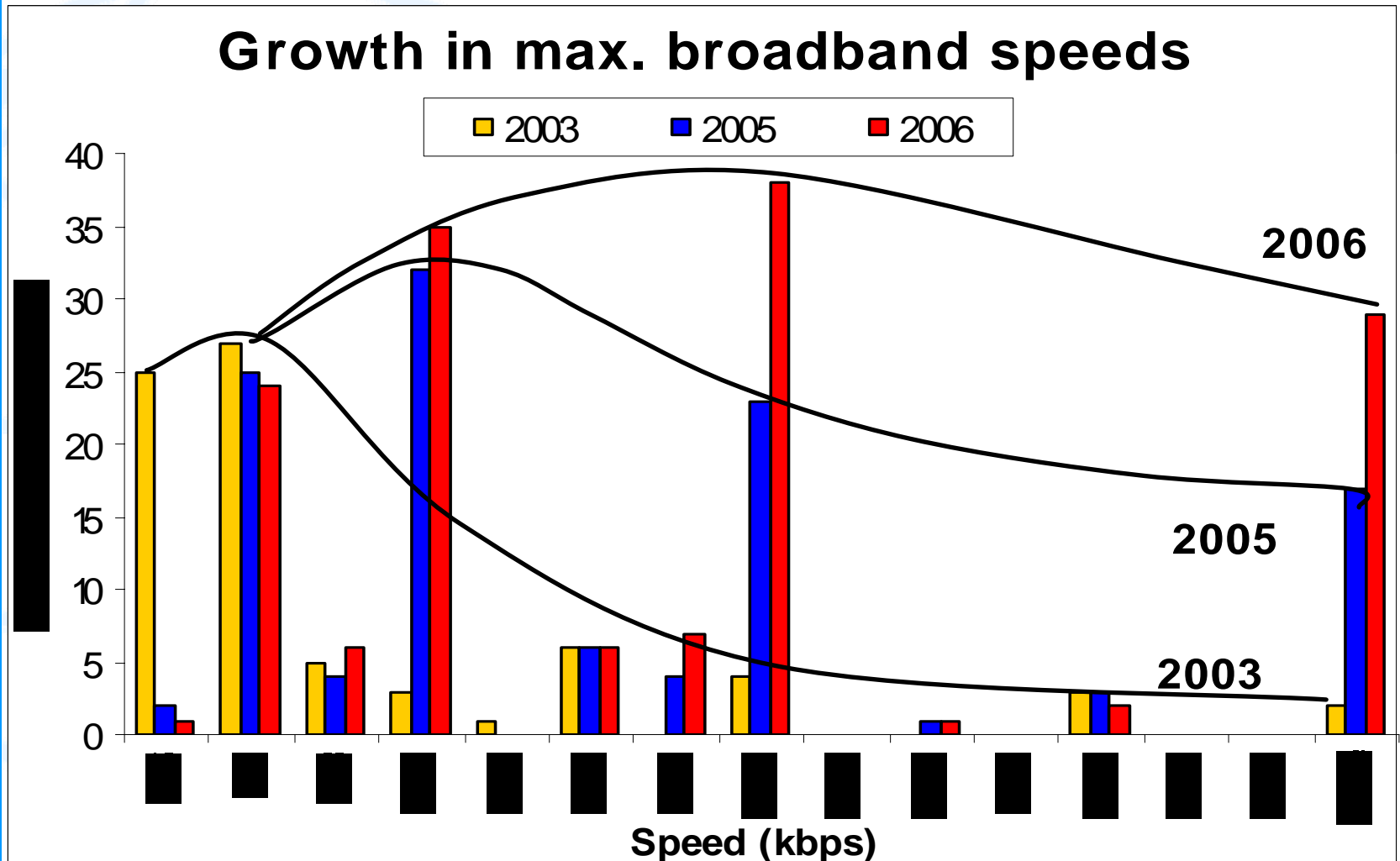


Note: "Data" refers to price packages with bit caps. "Time" refers to time-metering. "Both" refers to packages with both data and time caps. "Flat rate" implies unlimited monthly use.

Source: ITU World Information Society Report 2006 (www.itu.int/wisr).



Growth in broadband speeds

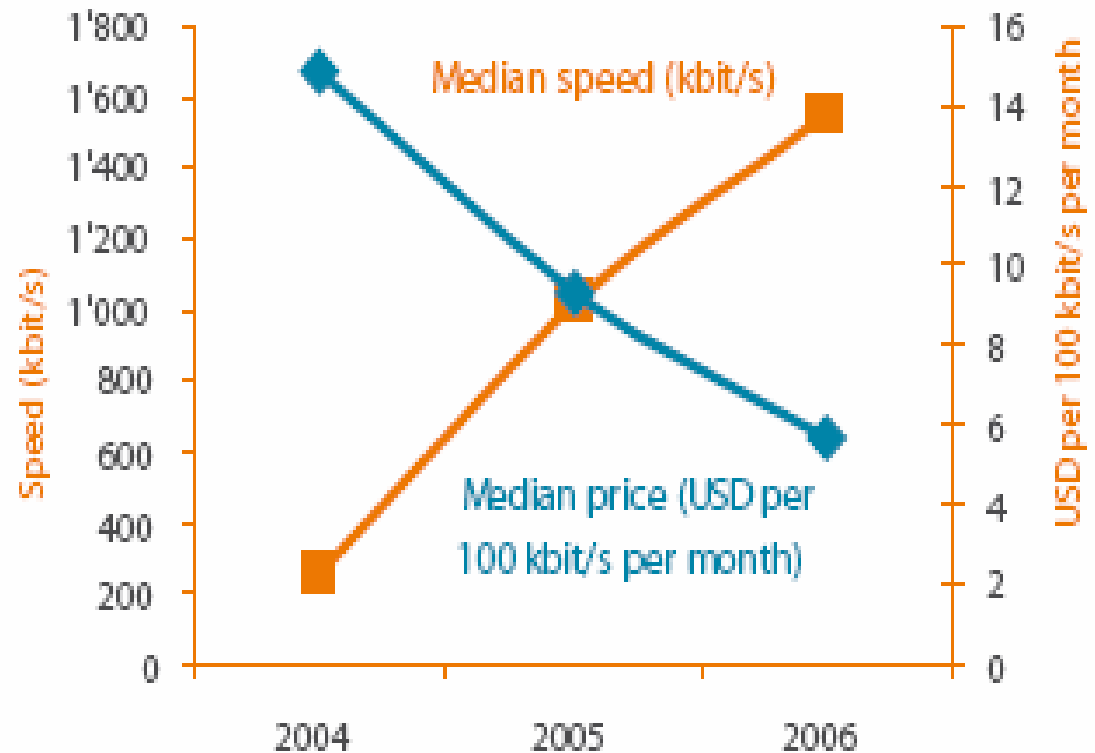




Trends in broadband pricing, global

- **International survey of broadband prices**
 - **Based on 133 economies that had broadband as early as 2004**
- **Methodology**
 - **Based on price in US\$ per 100 kbit/s**
- **Price trends**
 - **Median price has fallen by 41% p.a.**
 - **Median speed has risen by 66% p.a.**
 - **Faster than Moore's Law**

Broadband price and speeds
(for 133 economies)





Triple-play bundles: The example of Free.fr (Iliad)

- **29.99 Euros per month (US\$40)**
- **DSL Internet at 28 Mbit/s (down) 1Mbit/s (up)**
- **Unlimited VoIP calling to 49 countries worldwide (+domestic calls in France)**
- **100 video channels (+ 150 options)**
- **But ... only available in France**



NGN interconnection options

● Towards complexity

- Differentiate between different traffic streams with different QoS
- Differentiate between different user terminal devices (e.g., fixed, wireless, portable)
- Provide interconnection options based on per-minute, per-volume, per-service type and per-content type

● Towards simplicity

- Sender keeps all (bill and keep)
- Arrangements based on interconnection capacity



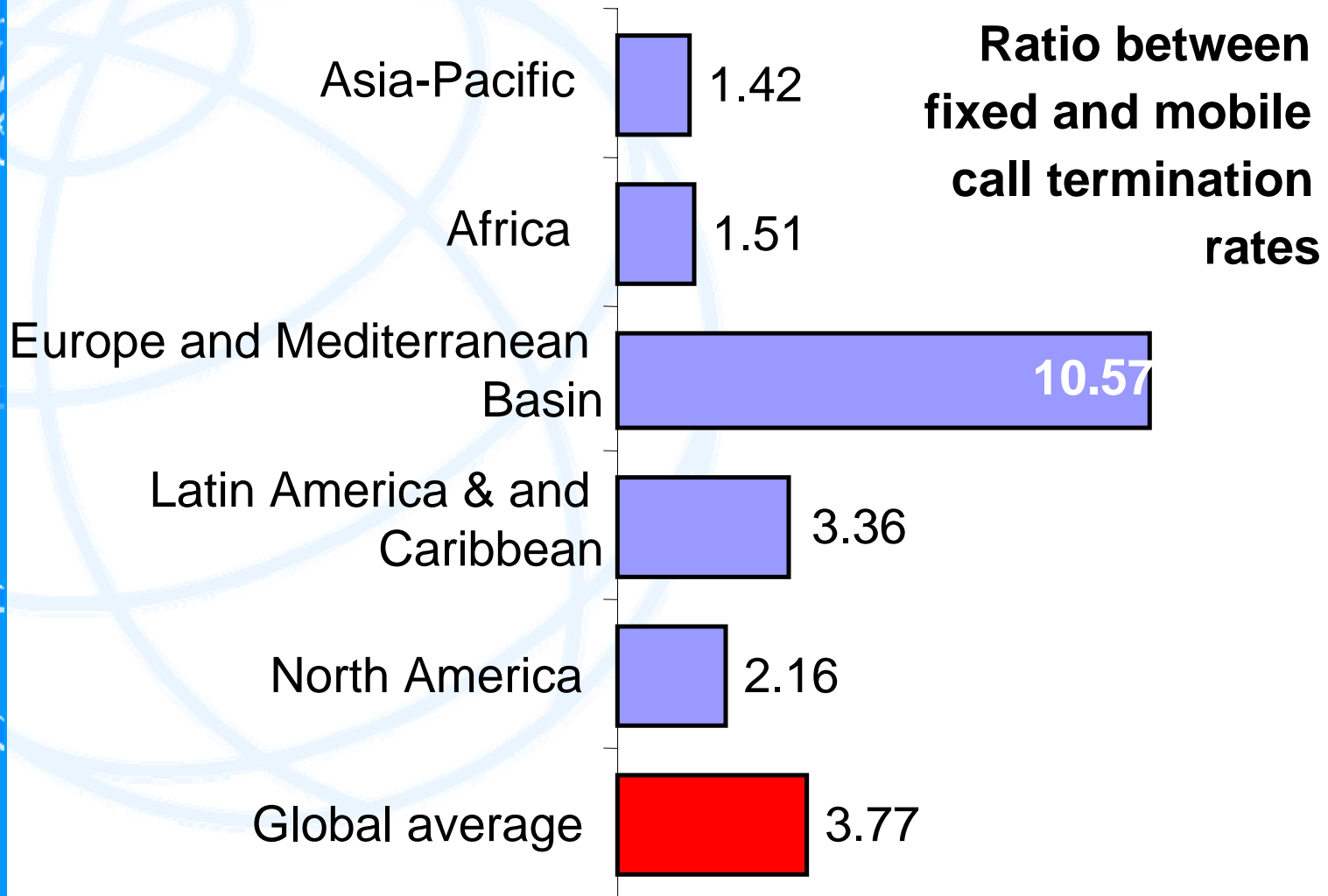
Termination rates worldwide

Termination rates in US cents per minute	Average fixed rate	Average mobile rate
Asia-Pacific	11.69	16.58
Africa	13.62	20.57
Europe and Mediterreanean	3.11	32.86
Latin America and Caribbean	4.88	16.43
North America	2.81	6.07
Global average	5.77	21.76

Source: ITU-T, based on survey of regional tariff groups.



Spot the odd one out





Conclusions

- NGN business case still unproven, but voice revenues continue to drive investment
- Inter-operator settlements remain important (but become more complex) in an NGN environment
- Trends toward bundling and flat-rate pricing in retail market will be mirrored by capacity-based pricing in wholesale market
- **Short-term:** Per-minute settlement is preferred choice for carriers, but hard to sustain. Rates are dropping.
- **Longer term:** shift towards capacity-based pricing and/or towards “Sender Keeps All”
- **But,** migration to NGN will not make concerns over Significant Market Power (SMP) disappear



Thank you.

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