



International Telecommunication Union

Internet, Broadband and Satcoms: the challenges ahead

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NB: The views expressed herein are those of the author and are not necessarily those of the European Commission



Workshop on Satellites in IP and Multimedia
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The Importance of Internet Access

Broadband Internet Access is at the heart of national and regional development policies:

- o **S Korea**, multi Bn \$ investment towards broadband access;
- o **Germany**: D21 initiative;
- o **UK**: Edubroadband initiative;
- o **F**: preferential rates loans for infrastructure deployments;
- o **DK**: Home PC;
- o **Sweden**: broadband nationwide initiative;
- o **Canada**: Pilot Program for rural communities
- o **eJapan**;
- o **eEurope 2005**, etc,etc.....

Typical Model: Public Private Partnership

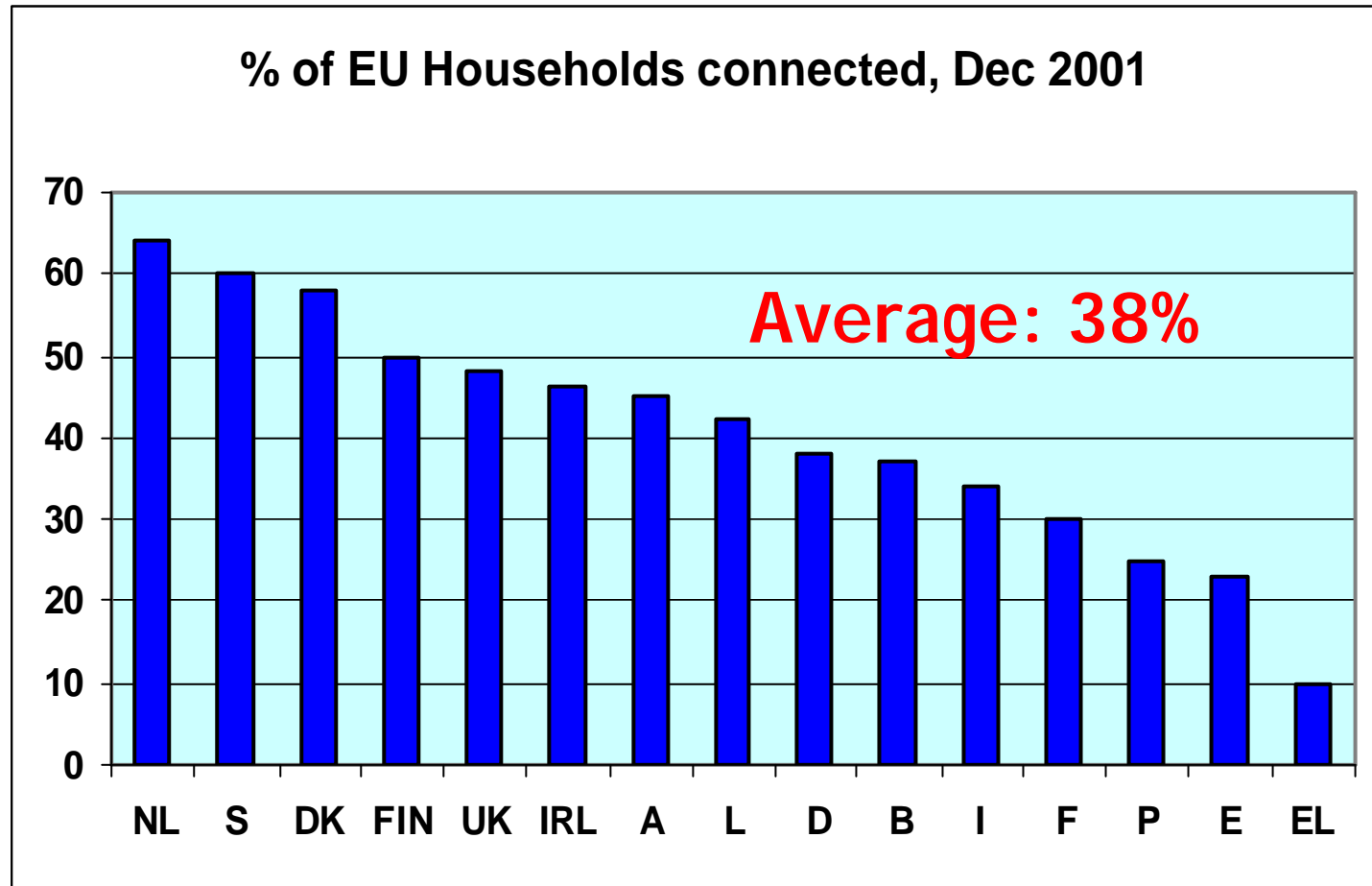


Internet Evolution

- **June 2000: the EU Council** states the need for a rapid evolution towards IPv6.
- **September 2000 :Japan IPv6 roadmap**, setting a deadline of 2005 to upgrade existing networks in business and public sectors.
- **February 2001**
 - **Korea** announced plans to roll out IPv6.
 - **Taiwan** has also taken a decision concerning IPv6 and established an IPv6 steering Committee.
 - Bilateral consultations, at Ministerial level, between **P.R. of China and Japan**, on the means to further promote IPv6.
- **December 2001**
 - An industrial initiative towards the establishment of a **North American IPv6 Task Force** has been launched, reflecting the growing pressure for an upgrade of the Internet.



EU Internet Penetration

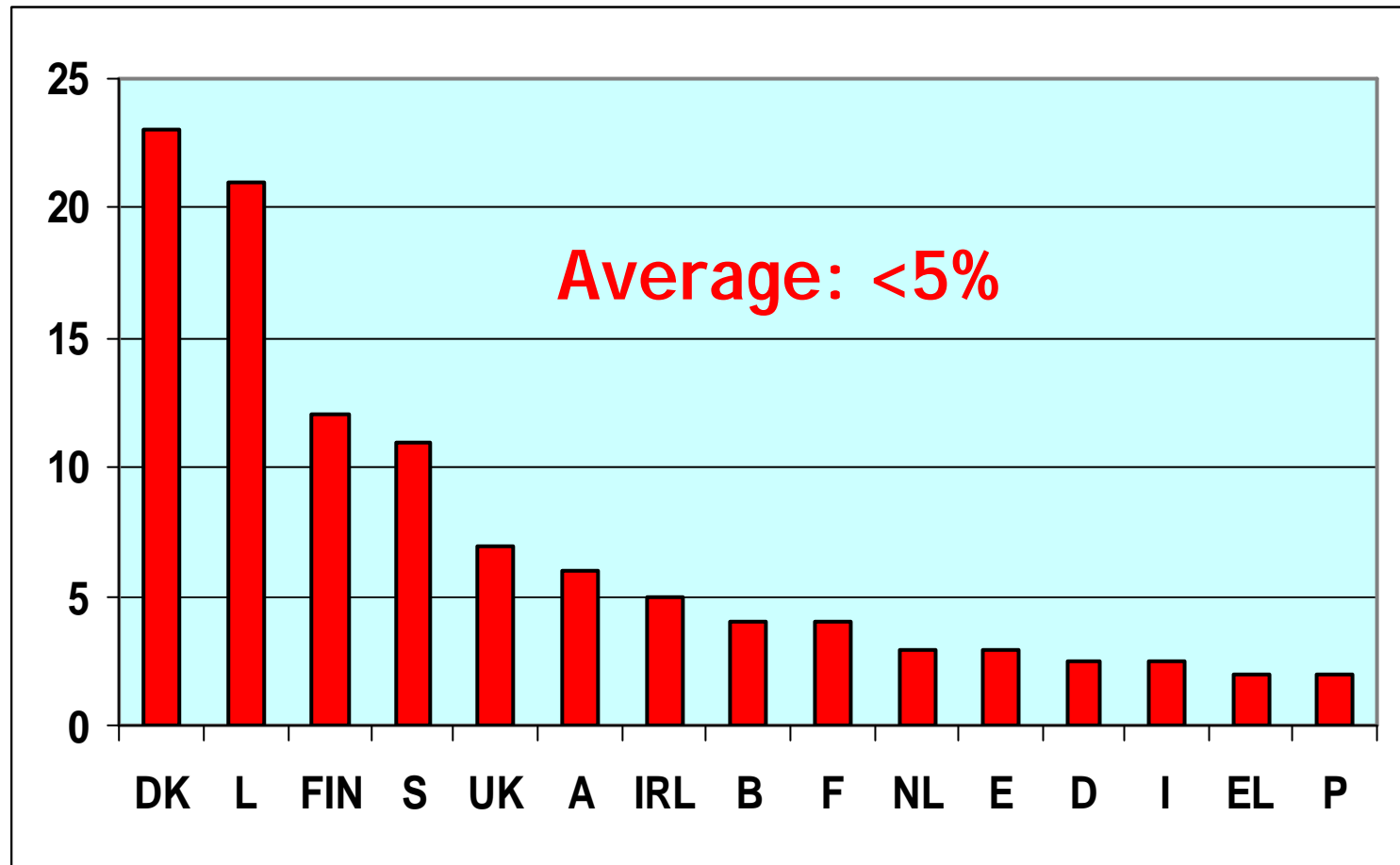


Source: eEurope benchmarking report



EU: Internet in Schools

PC's connected to Internet per 100 Pupils, 2001

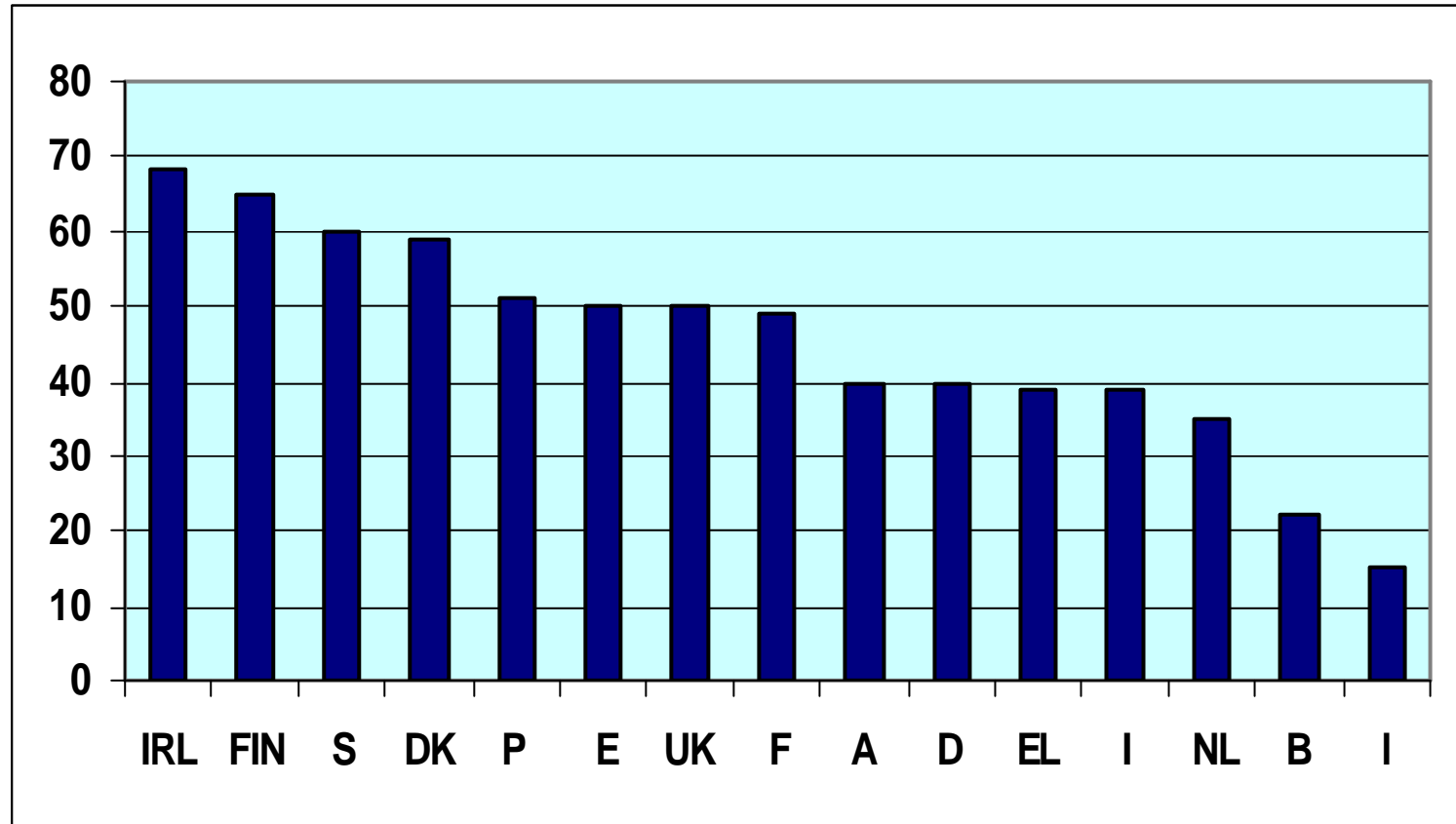


Source: eEurope benchmarking report



EU: eGovernment Services

On line availability of basic services, 2001



Source: eEurope benchmarking report



EU: Other on line services

eHealth:

- o taking off rapidly,
- o more than 60% of primary care providers have an Internet connection;

eCommerce:

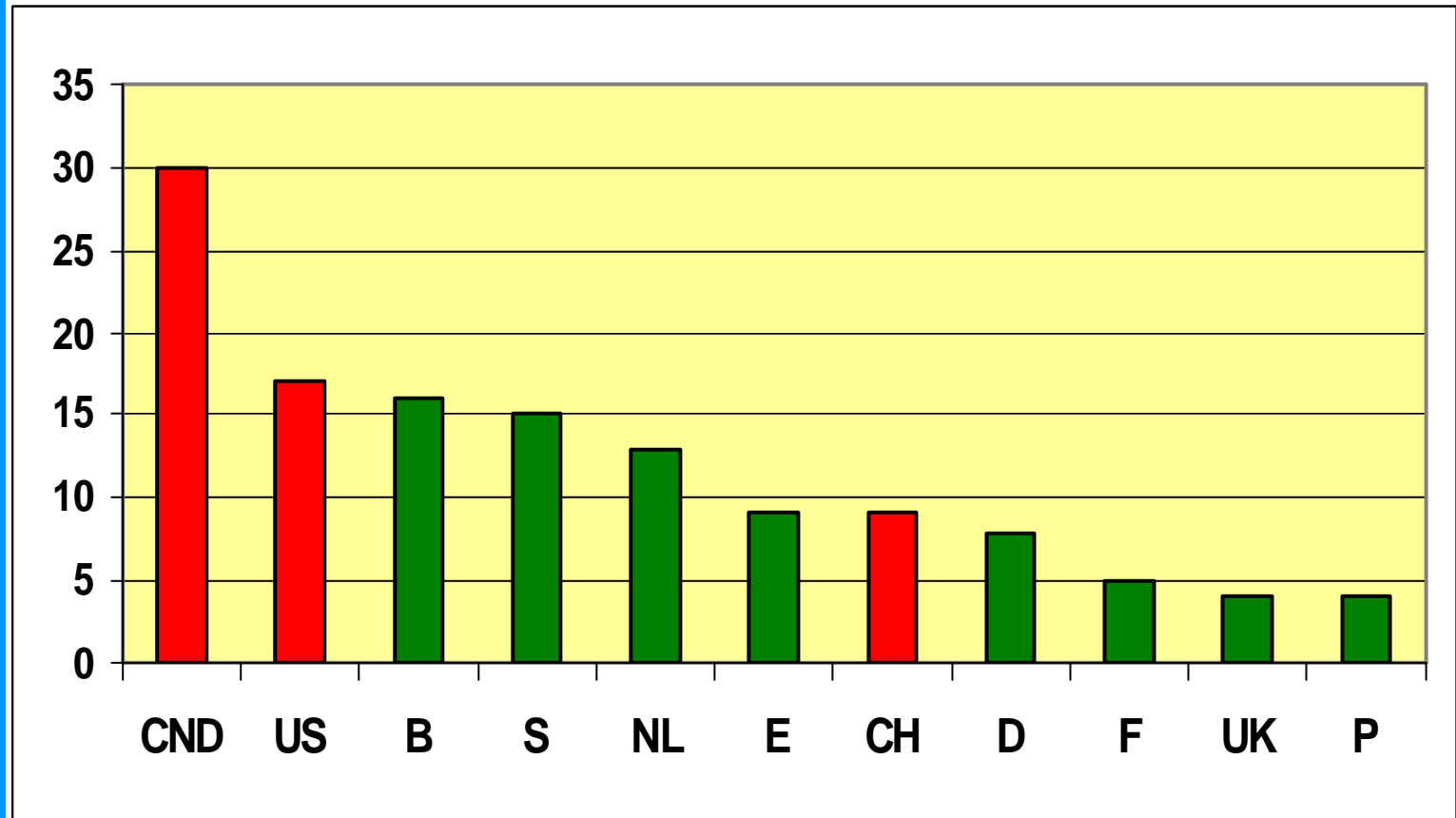
- o 22% of EU companies in average selling online;
- o Service sector at the forefront;
- o 35% in average of Internet users having already purchased on line

Still, wide disparities across MS



Broadband Internet Access

Percentage of Internet Broadband Connections,
Q3 2002.



Source: CMA Consulting



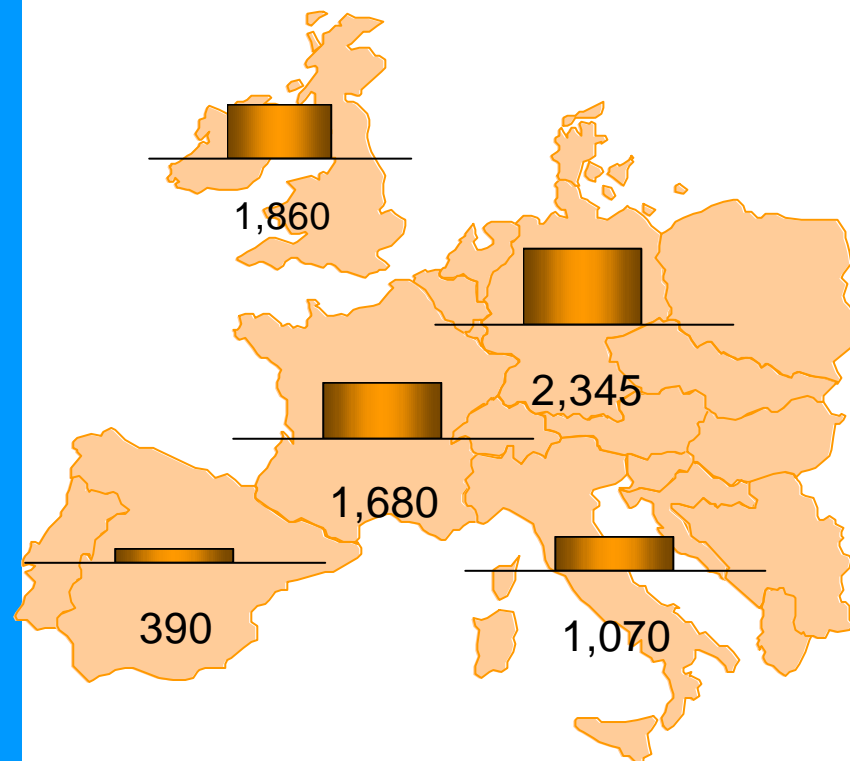
Broadband Internet Access

- Broadband access is growing fast in EU and in the US. Still, only 3% (average) EU households with fast connections, taking into account NAS;
- In the US: cable=63%; DSL=33%; satellite represents about 1%
- Europe high speed coverage is in the order of 50+%; still, it is expected that a significant number of households will remain beyond DSL reach



Broadband Internet Access

Households with no cable modem/DSL-access by 2005 (in '000)



- >29 MM broadband households demand by 2005?
- Estimate of 7.3 MM households with no access to terrestrial upgraded cable or DSL reach by 2005
- Broadband demand can be met by existing satellite capacity
- Investment into NG satellite technology subject to market development

Source: ESOA



Broadband Internet Access

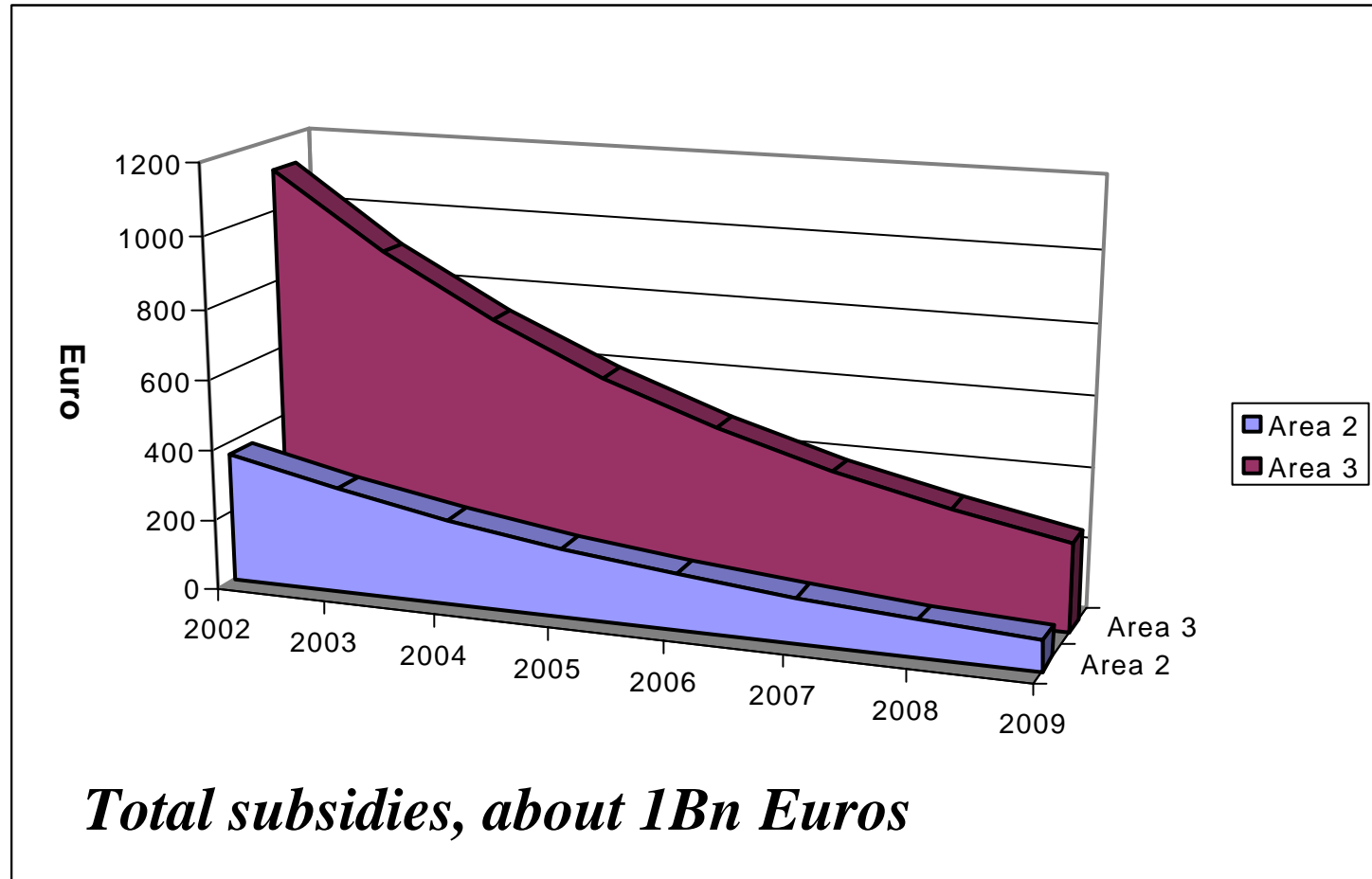
Examples of typical DSL/Cable reach





Broadband Internet Access

Required DSL subsidization per household in rural areas, example of Nordic countries



Source: Telenor, T-Nova, Univ of Aveiro

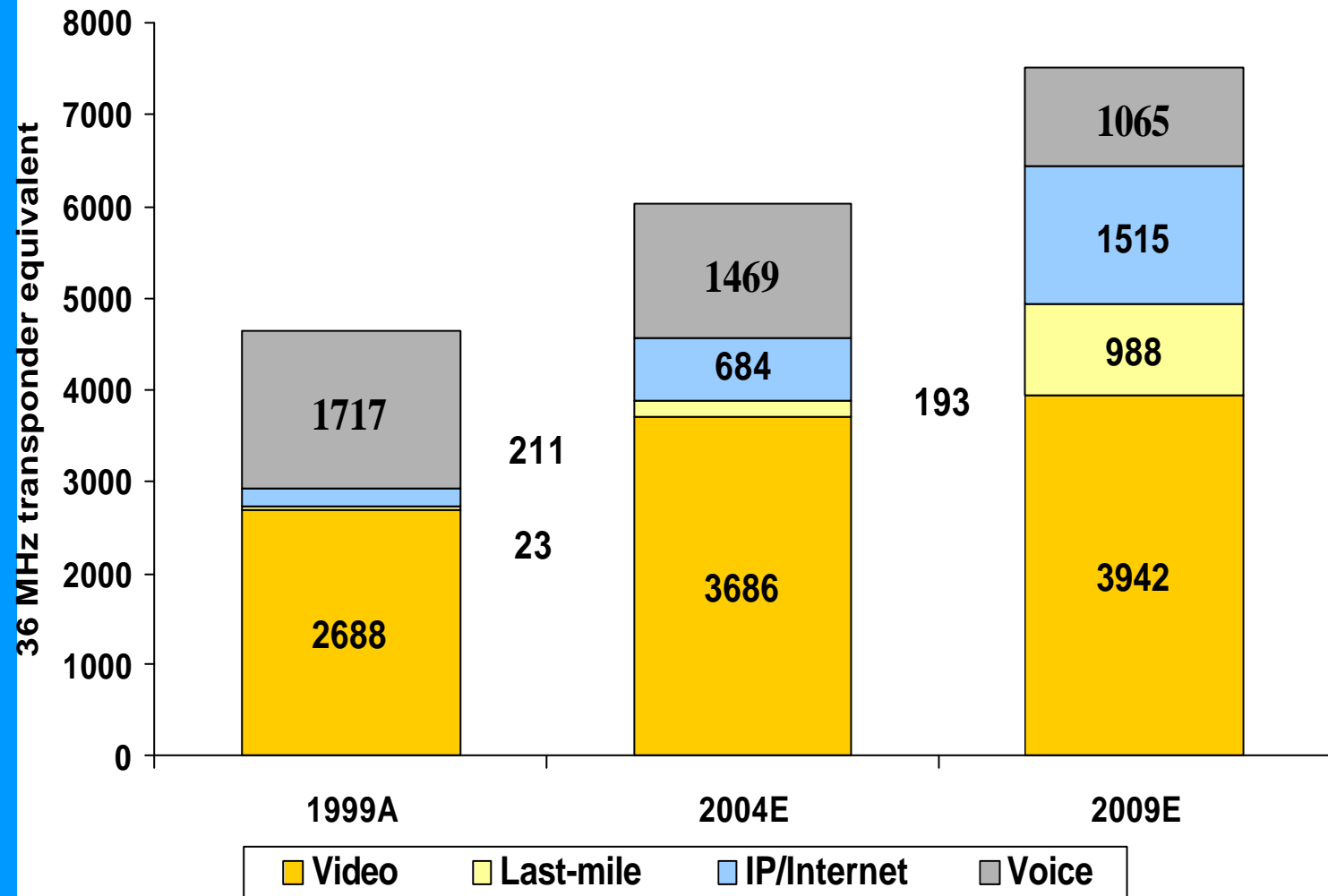


Satcoms and Internet

- **Satcoms success story is broadcasting.** In Europe, about 40 M DTH subscribers in 2002, 110 M world-wide.
- **Satcoms for Internet:**
 - ▲ *About 11% (1500) of WW ISPs use satellite links to backbone, representing a limited % of total ISP traffic*
 - ▲ *ISPs are using about 270 transponders (of ~ 6000) for 750 M\$ revenues (~300 % growth in one year). Mostly one way links from the US to abroad PoP's*
 - ▲ *In excess of 700 and 1500 transponders are forecasted respectively in 2005 and 2010.*



Satcoms and Internet



Source: Euroconsult

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Satcoms and Internet

- **Satcom Internet, today situation**
 - ▲ *Limited to ISP, or professional usage*
 - ▲ *Starband disappointing uptake in the US;*
 - ▲ *mass market offers appearing in Europe, e.g T-DSL, BT Openworld, Tiscalisat...*
 - ▲ *still, somewhat more expensive and lower performance than terrestrial offerings; but, ubiquitous coverage;*
 - ▲ *expectations of broadband constellations (f+m) designed to serve broadband mass markets not realised so far;*
 - ▲ *evolution from broadcasting or established systems appear today more realistic.*



Satcoms and Internet

- **How to foster market take up:**
 - ▶ *cheaper solutions: bandwidth usage (OBP, IP v6 over DVB...), cheaper terminals;*
 - ▶ *standardised solutions, e.g evolved DVB-RCS;*
 - ▶ *novel architectures, exploiting broadcast, caching and edge networking, both for fixed and mobile;*
 - ▶ *compelling applications, e.g education or health, and content (peer to peer vs centralised);*
 - ▶ *fostering emergence of intermediate business layers, e.g 'education service provider', or 'health service provider'*

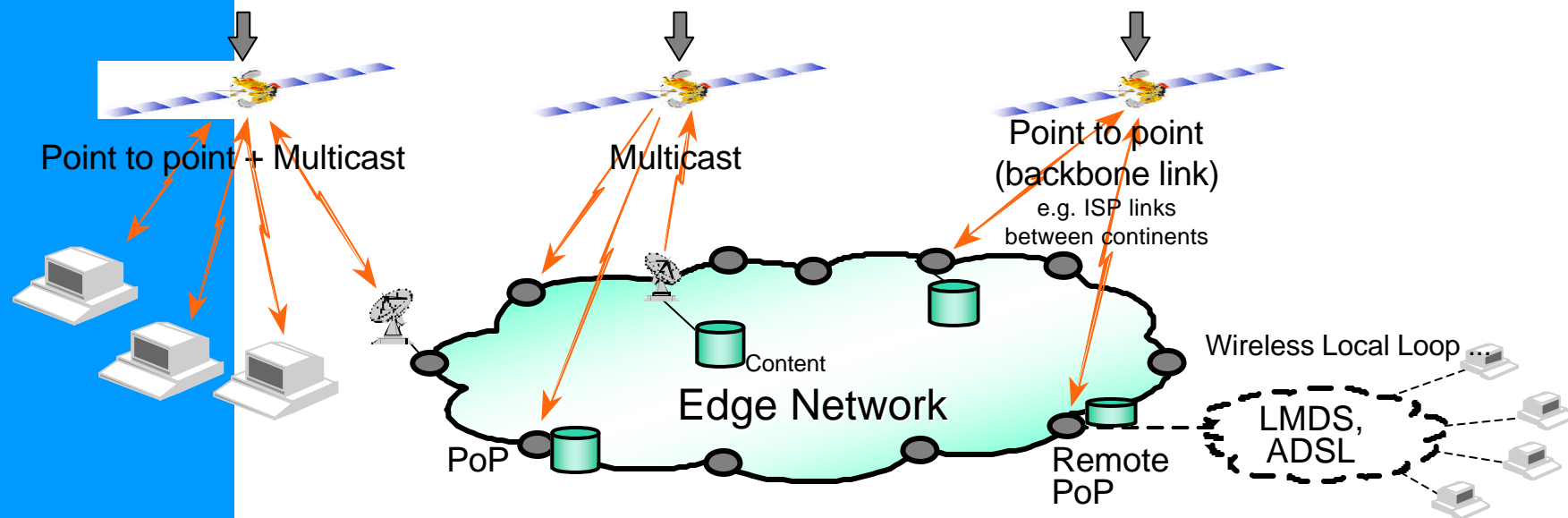
Necessary, though possibly not sufficient conditions



Satcoms and Internet

Example architecture

CSP/MSO	Access (End User <-> Edge)	Content Distribution to the Edge	ISP Links Edge to the Backbone
	<ul style="list-style-type: none"> • Corporate Vsat networks • SME's • SOHO's • Residentials 	Internet Service Providers Established Service Providers Content Providers	Internet Service Providers



Carriers + content providers & aggregators = the Content Delivery Networks (CDN)

Content Aggregation: caching & streaming



Satcoms and Internet

○ Other important points:

- ▲ *Importance of blanket licensing;*
- ▲ *harmonisation of licensing procedures across the Community;*
- ▲ *securing spectrum;*
- ▲ *Open standards*

At Community level, these aspects are primarily addressed, together with 'terrestrial' aspects, in the context of the 'new regulatory package', including the Spectrum Decision



Satcoms and Internet

○ RTD support in the EU

- ▲ *ESA ARTES Program (+national initiatives);*
- ▲ *Framework program of the Union: today, 100 M Euro for Satcoms;*
- ▲ *Upcoming 6th Framework program: opportunities under IST (broadband and mobile 'Strategic Objectives') and under Aeronautics and Space Thematic Priorities;*
- ▲ *Context of large scale initiatives, co-ordinated with ESA;*
- ▲ *New instruments, aiming at federating RTD in Europe.*
- ▲ *Programmatic context targeted, in support of 'EU Space Policy'*



Conclusions

- Satcoms have a potential role to play in the provision of ubiquitous broadband Internet access to EU citizen;
- A number of evolutions are still required to unleash the full potential of this technology;
- Regulation and spectrum remain two key drivers for a successful take up;
- The EC, together with ESA, is committed to support satcom developments in view of EU wide deployment of novel Internet services and applications.