LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

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UBB Market Structures: Focusing the European Perspective

CITI's annual Conference on the:
State of Telecom: National Next-Generation Broadband Plans

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Agenda

- UBB Infrastructure Models
- Expected Industry Structures
- The Future of Wireless

Whereas shifting to UBB is an option for some nations, for the European Union closing the white spots is of major importance.

National Broadband Plans compared

State	BB Penetration per 100 inhabitants	Subsidy in EUR/citizen in EUR /household
Australia	25,4%	1.734 USD/C 3.513 USD/HH
EU	22,9 %	3 USD/C 7,5 USD/HH
France	26,6 %	-
Germany	27,4 %	3 USD/C 7,5 USD/HH
Italy	18,5 %	39 USD/C 98 USD/HH
Japan	23,6 %	3 USD/C 10,5 USD/HH
UK	22,4 %	4 (27) USD/C 43 (68) USD/HH
USA	25,8 %	24 USD/C 65 USD/HH

Rollout Cost per HH
880 € - 2.500 €

Total numbers of white areas?

Focus European Union

- **Question 1:**
  Which national broadband plans envision competitive UBB infrastructures and which envision (or encourage) a single, monopoly broadband infrastructure?

- Not applicable for EU
  - Regulatory Environment
  - Technology Neutrality

EU Question:
How to achieve nationwide Broadband (including rural areas)?

Source: Picot/Grove (2009); Holznagel/Deckers/Schramm (2009)

Technology Neutrality is a fundamental concept not favoring UBB. The German Regulator published broadband measures accordingly.

Framework and Measures

Technology Neutrality

One of the five principles underpinning the regulatory framework (2002) 2002/21/EC:

- "…making regulation technologically neutral, that is to say that it ***neither imposes nor discriminates*** in favour of the use of a ***particular type of technology***, does not preclude the taking of proportionate steps to promote certain specific services where this is justified, for example digital television as a means for increasing spectrum efficiency."

- Exemptions:
- Efficiency increase?
- Social welfare?

What about fibre?

Selected BNetzA Measures

- I Risk reduction
- II Adequate access and access pricing
- III Increase planning security
- 1 Exemptions from regulation for Open Access
- 3 Support of infrastructure sharing/cooperation
- 12 Higher termination fees for FTTB/H
- 13 Subnational markets under consideration
- V Digital Dividend and further spectrum
- VI Infrastructure mapping

Source: BNetzA (2009), EC (2002)

The introduction of subnational markets allows for infrastructure competition in population dense and service competition in population sparse areas.

Expected Industry Structures in the EU

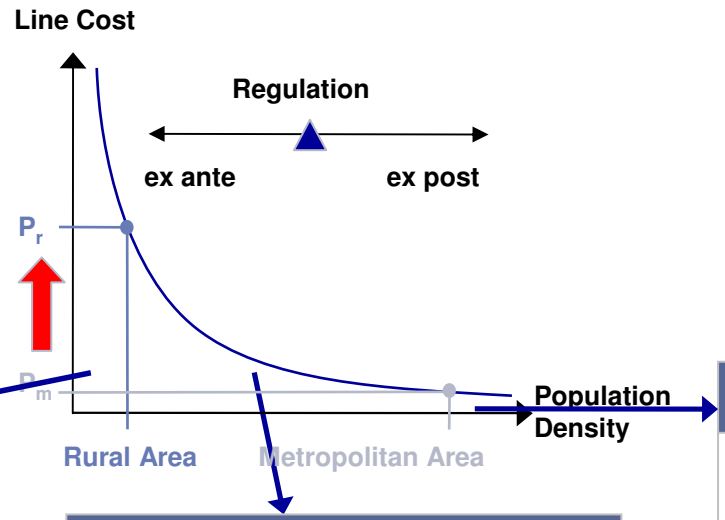
Incumbent's Profitability in HH Coverage in Germany:

- 75% VDSL
- 21,5% PON
- 13,7% P2P

Second Investor's potential Coverage HH in Germany:

- 18,5% VDSL
- 0,3% PON
- 0,0% P2P

Subnational Markets



White Areas

Rural Areas

- Limited (no) access
- Often limited to one technology (e.g. DSL) with less capacity
- No existing NGA business plans

Service Competition

Grey Areas

Grey Areas

- Availability of broadband offerings
- 1-2 Competitors

Trade Off

Black Areas

Cities

- High availability of competitive offerings (e.g. cable, DSL, W…)
- Variety of passive infrastructural components (e.g. ducts,…)

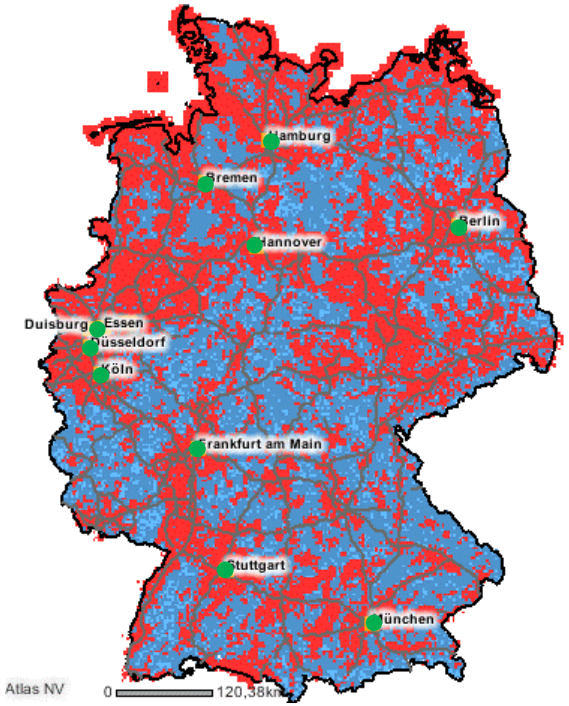
Infrastructure Competition

Source: WIK (2008), Picot/Grove (2009)

GSM has gained a nationwide coverage, 3G is focusing population dense areas, and LTE will represent the next "spots" within 3G cells.

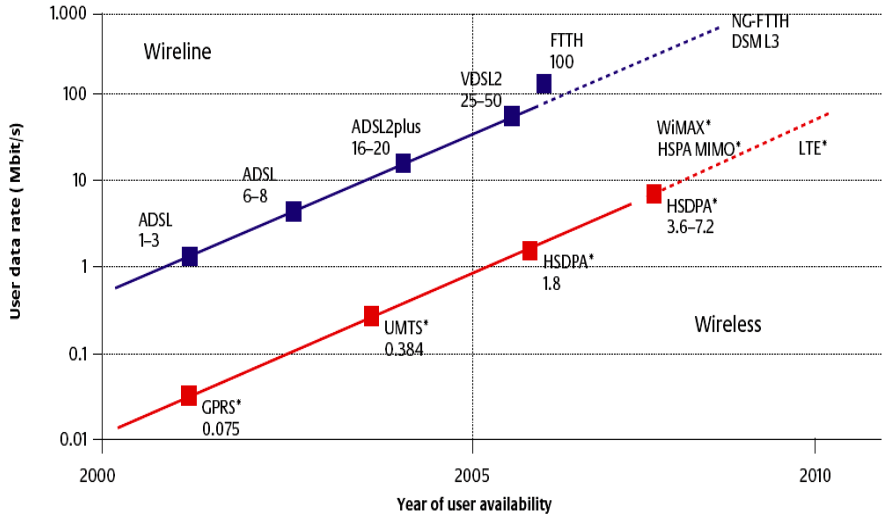
Future of wireless Broadband

Technology Neutrality



GSM | GSM +UMTS | LTE

Growing Gap between Technologies

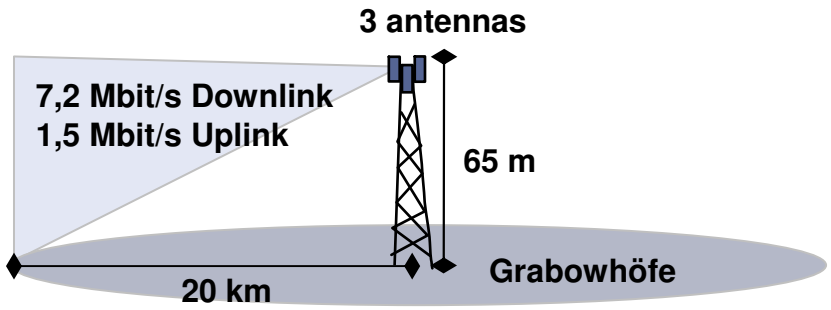


- Ultra high data rates only achieved over very short distances wirelessly
- Wireless access points should be as close as possible to the CPE

Source: Vodafone (2009); 3GPP (2009);

A pilot project Grabowhöfe shows up major drawbacks and denies an intended use of the Digital Dividend for the primary provision of broadband to rural areas.

Case Study: Grabowhöfe

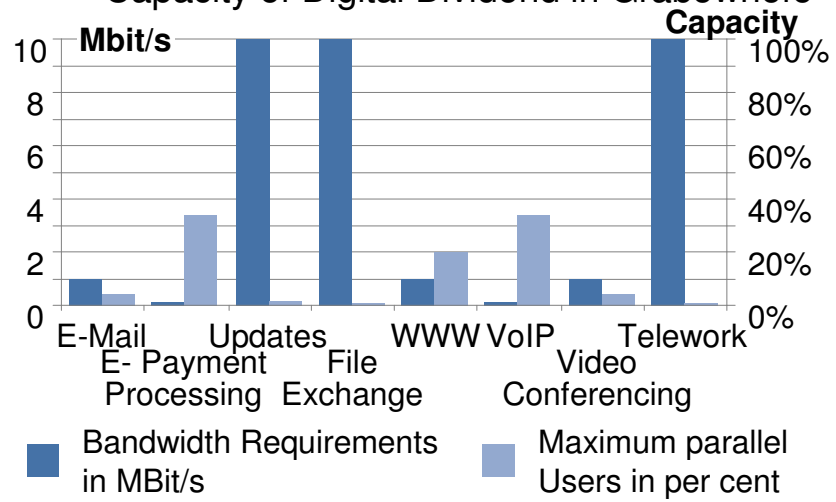


- Grabowhöfe: 165 inhabitants on 31.12 km²
- DSL light partially available (128 kBit/s)
- E-Plus/Ericsson/Ministry of MWP Cooperation
- Frequency Range: 790 – 862 MHz
- UMTS HSDPA Technology with 7.2/1.5 Mbit/s
- Results:
  - 1/5 traffic of "normal" Internet User
  - Majority connections < 3 Mbit/s

Pilot Project

Service Capacity Analysis

- Matching:
  - Minimum requirements of the Ministry of Economy, Labor and Tourism of MWP
  - Capacity of Digital Dividend in Grabowhöfe



Capacity does not fulfill requirements of the ministry at all (highest value: 34%, lowest: 1%)

Source: Data on pilot project published by E-Plus Mobilfunk GmbH & Co KG (2009), MWAT (2009a, 2009b)

SUMMARY

Immediate Governmental Action

- Closing Digital Divide
- Need for Public Funding (e.g. PPP)

Technology Neutrality

- Existing markets compatible with new (innovative) ones?
- Focus on fibre required due to sustainability?

Infrastructure Separation

- Examples: Australia, UAE, UK
- Last measure to incumbent?

Wireless as secondary (U)BB

- Fixed broadband as primary provision
- Wireless is always a shared medium

THANK YOU