

UMTS in Poland: perspectives

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Warsaw 2-4 October 2001

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Contents:

- ◆ Supply side: costs of implementing UMTS
- ◆ Demand side: mobile market overview
- ◆ Perspectives for UMTS development
- ◆ Summary

Supply side

Costs to the operators:

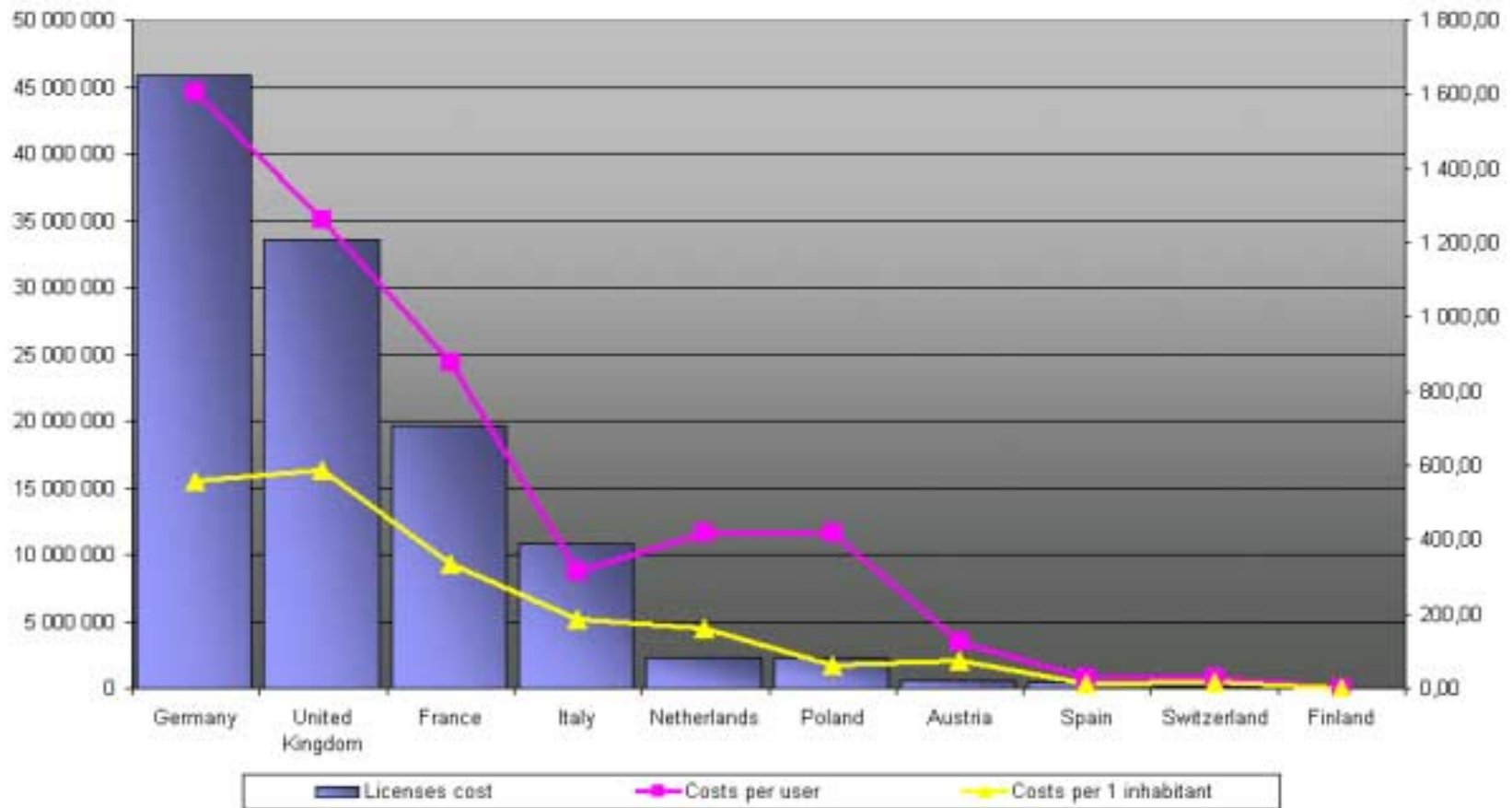
- ◆ License costs
- ◆ Network modernization:
Base stations density higher than in GSM
900/1800
- ◆ Backbone infrastructure:
Minimum bandwidth per user in UMTS: 384 kb/s
(WAP 9.6 kbps. GPRS 115 kbps)

License costs

- ◆ Former Ministry of Post and Telecommunications sold 3 licenses to existing mobile operators
- ◆ Additional one to be issued at later stage
- ◆ Single license cost: 650 mln €
- ◆ Overall license costs amount to 2.6 mln €
(4 licenses)

License costs comparison

Licenses costs



License costs

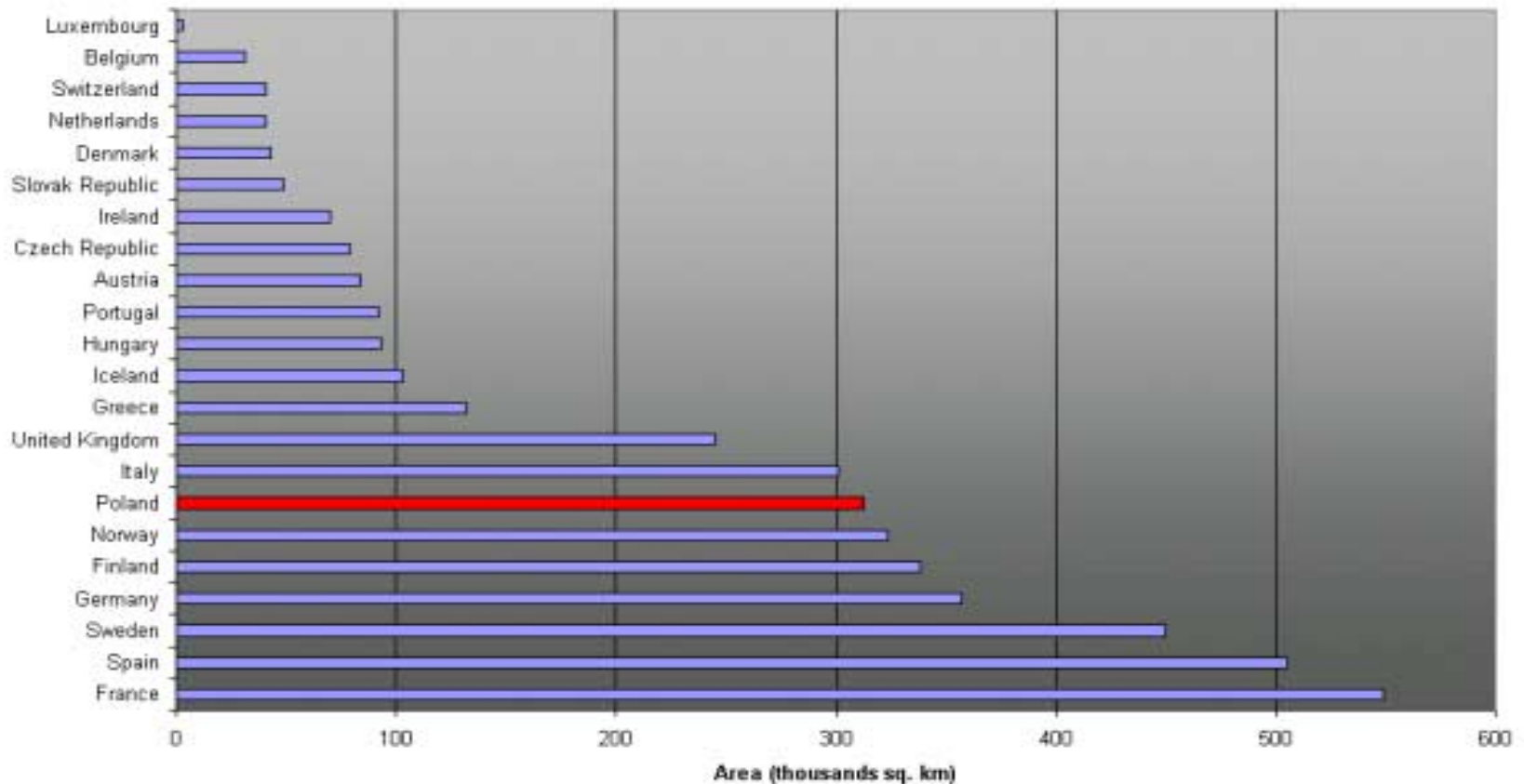
- ◆ Costs seem to be consistent with country size and population (proxy for potential demand)
- ◆ Relatively large costs per user – especially given the relatively low GDP per capita and purchasing power (actual demand)

Network costs

- ◆ Costs of network construction believed to be positively correlated with country area
- ◆ Costs per user are negatively correlated with country population density – larger population density requires relatively smaller number of base stations per user

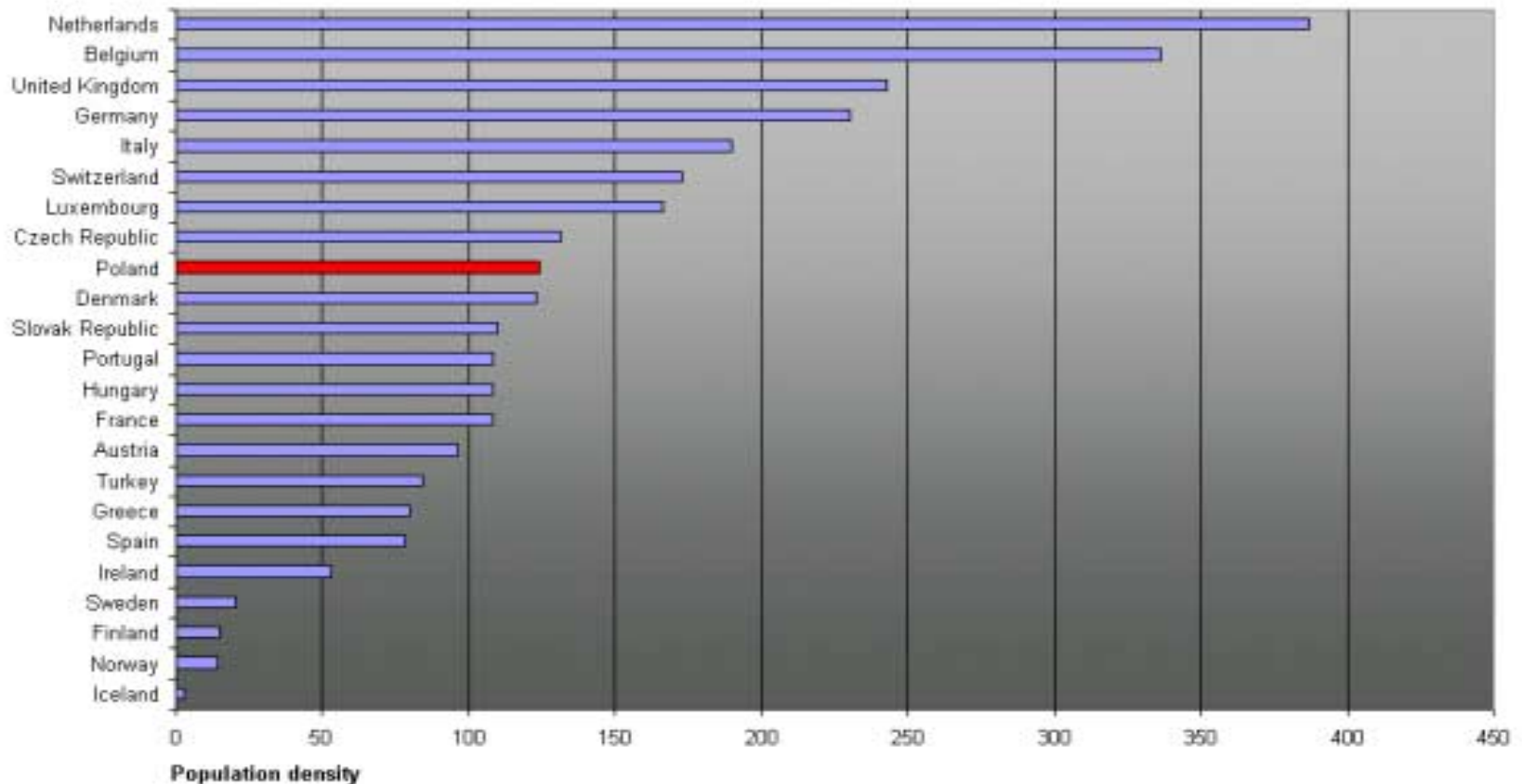
Factors affecting costs (1)

Selected OECD Countries by Area



Factors affecting costs (2)

Selected OECD Countries by Population Density

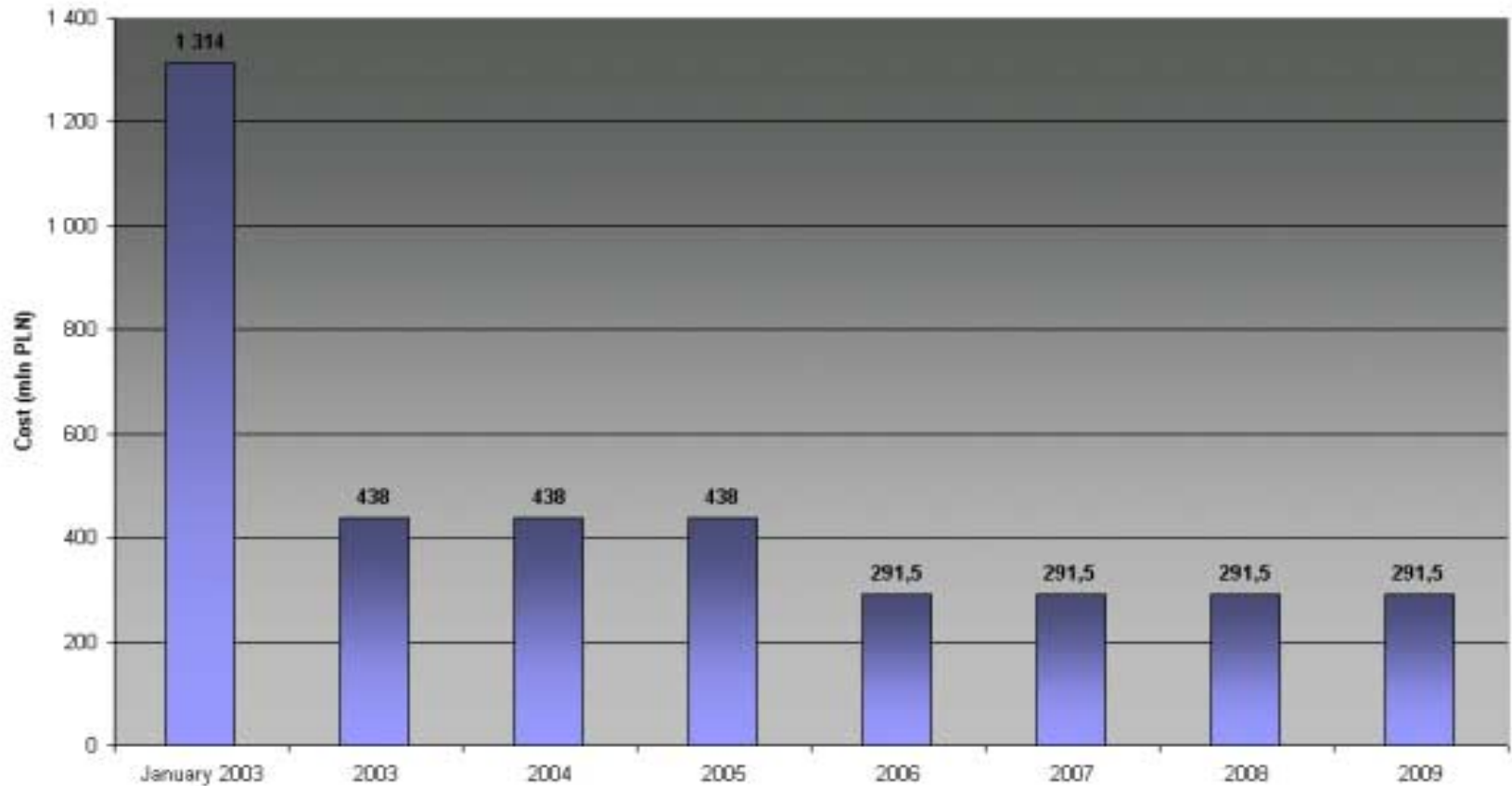


Factors affecting costs

- ◆ Relatively large country area suggests high network construction costs
- ◆ Density of population suggests average costs per 1 inhabitant
- ◆ Costs per user greatly depend on the penetration of service

Costs forecasts

Estimated network construction costs

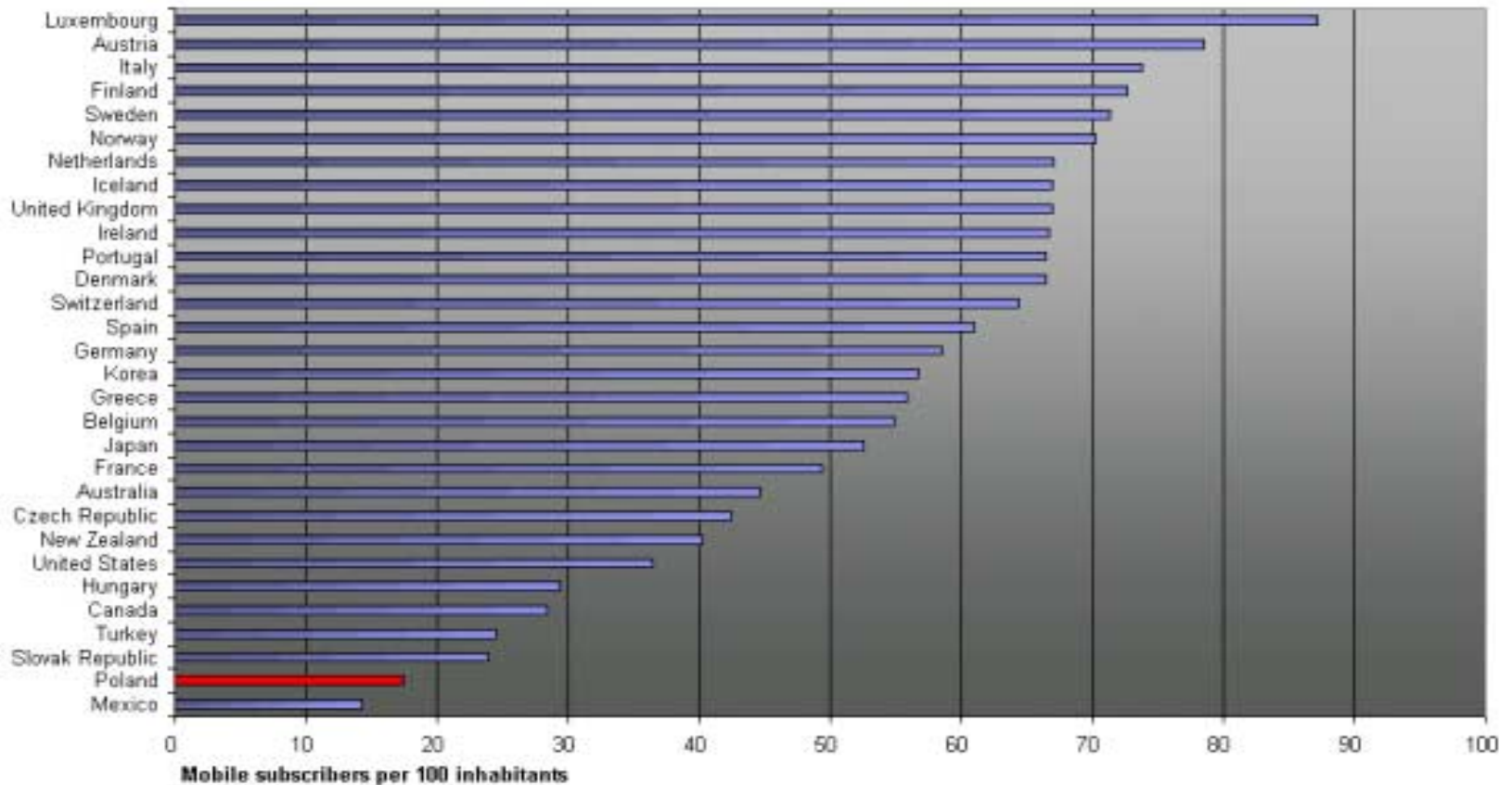


Demand side

- ◆ GSM network penetration: crucial for future UMTS demand
- ◆ Development of UMTS depends on customers' demand for data transmission services and internet penetration

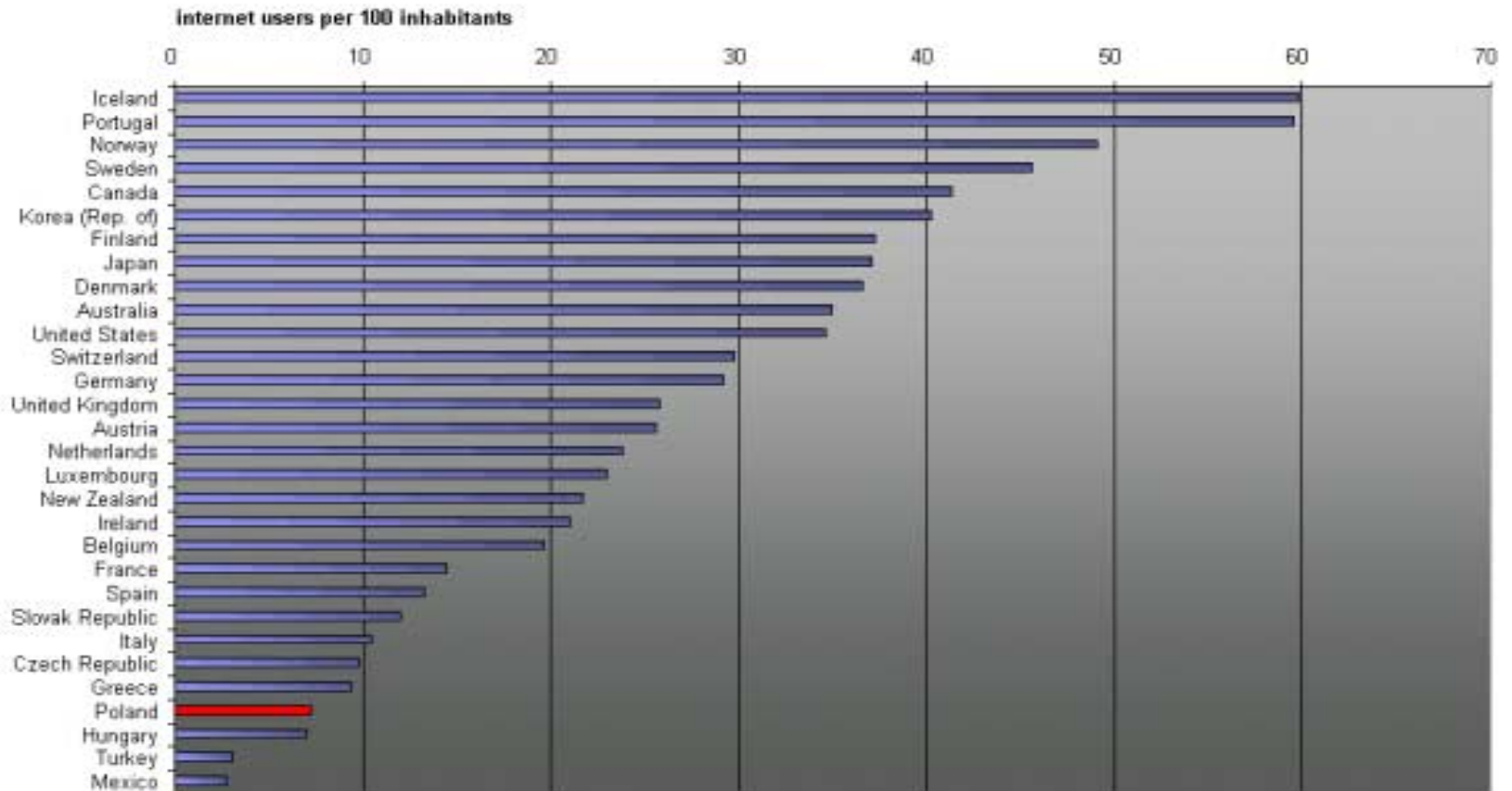
GSM penetration

OECD Countries by mobile penetration

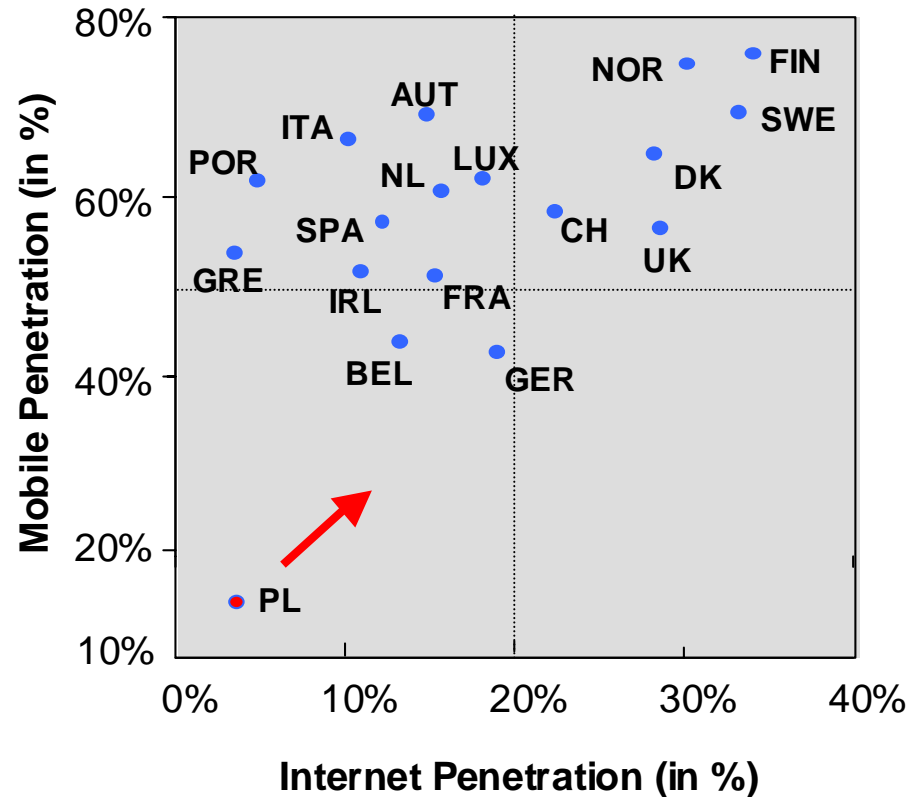


Internet penetration

Estimated internet users per 100 inhabitants, OECD countries



GSM and Internet penetration comparison with EU





Internet penetration

Low internet popularity may be regarded as obstacle to development of the UMTS market

However: demand for internet services is growing at a high pace

Growth of internet and mobile services

- ◆ Data transmission through mobile devices gains popularity: Idea reports WAP second most popular added service.
- ◆ Most of the WWW services have their WML (WAP) versions for WAP enabled handsets
- ◆ Spread of e-banking and m-banking: mBank. the first Polish internet bank reported 100 000 accounts after less than 1 year of activity
- ◆ However: major obstacles to e-commerce are low purchasing power and reluctance to credit card payments

Forecasts

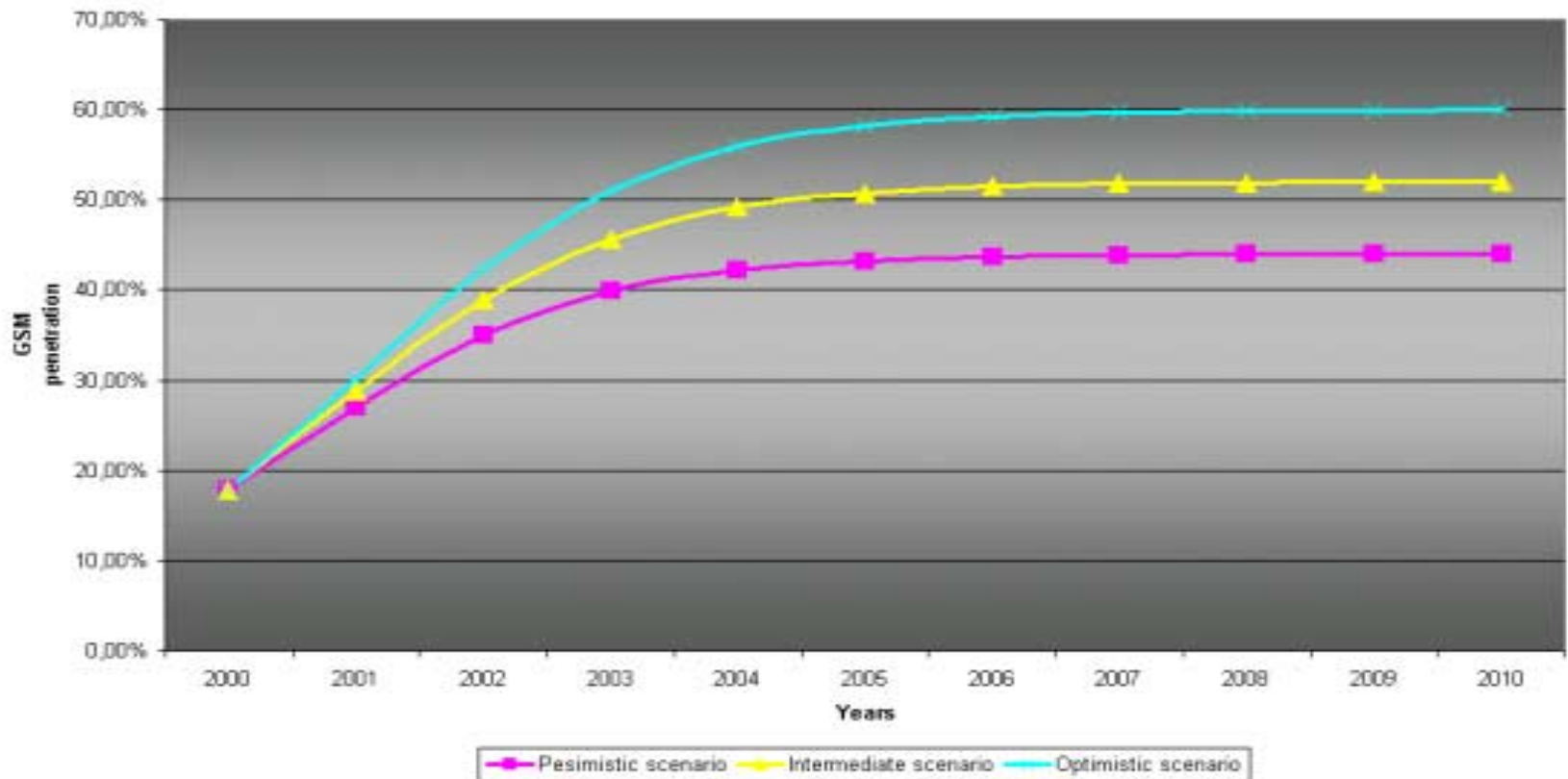
ITTI projected 3 scenarios for GSM development
GSM penetration will reach (in 2010):

- ◆ 44% in pessimistic scenario
- ◆ 52% in intermediate scenario
- ◆ 60% in optimistic scenario

Note: In all scenarios the level of GSM penetration does not exceed the present level of penetration in most of the EU members

Forecasts

GSM Penetration Forecasts



UMTS perspectives

ITTI simulation assumptions:

- ◆ 4 UMTS operators
- ◆ 2 billion PLN license cost
- ◆ Yearly network construction costs distributed over years 2003-2010 as presented before

UMTS perspectives (2)

2 scenarios:

UMTS share in mobile penetration in 2010:

- ◆ Scenario 1: 30%
- ◆ Scenario 2: 50%

6 results: for 3 GSM development scenarios combined with 2 UMTS scenarios

UMTS perspectives (3)

Simulated factors:

- ◆ NPV – Net Present Value: the sum of all expenses and revenues discounted with the assumed discount rate (eg. Capital depreciation or interest rate)
- ◆ IRR – Internal Rate of Return – the discount rate required for the NPV to be 0.

Simulation results

GSM scenario	UMTS scenario	NPV	IRR
pessimistic	30%	-2 821 058.29	-3.13%
intermediate	30%	-1 725 624.27	5.92%
optimistic	30%	-149 630.96	15.26%
pessimistic	50%	-304 899.68	14.34%
intermediate	50%	1 520 888.53	23.17%
optimistic	50%	4 147 658.80	32.59%

Simulation results: notes

- ◆ NPV negative for all GSM scenarios in the 30% UMTS share in mobile penetration
- ◆ NPV positive in the intermediate and optimistic scenario for GSM and negative for the pessimistic scenario for GSM – however, the IRR is positive in all 50% UMTS share scenario

Simulation results - notes (2)

- ◆ Simulation greatly depends on the estimated data – results should be treated with caution
- ◆ Simulation assumes 4 operators. If only 3 operators enter UMTS market, the results should be better for more pessimistic scenarios
- ◆ However: given the high costs of network modernisation and high license costs – the number of users and accelerated growth of mobile penetration should be one of the most important elements for UMTS development



THANK YOU

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