Trends of mobile services
Christopher Laska, CEO Telenor Hungary
Among the largest mobile operators in the world
More than 200 million mobile subscribers*
Approximately 33,000 employees
Present in markets with 2 billion people

- Mobile operations in 11 markets across the Nordic region, Central and Eastern Europe and Asia
- A stake of close to 40% in VimpelCom Ltd, operating in 10 markets
- Headquartered in Norway

Telenor Group is an international provider of tele, data and media communication services

*111 million customers in consolidated operations and 92 million in VimpelCom Ltd
Telenor Group holds 39.6% of the economic ownership in VimpelCom Ltd.
Mobile Trends

Mobile Operator Challenges

Opportunities and way forward
Rapid mobile broadband growth

in Hungary 40% growth in 2011

Global growth will average 50% per year for the next 3 years

Source: Ericson

Source: NMHH
Device diversification

- New devices drive traffic volumes
- Changing user patterns challenge profitability
- Users demand better network and service quality
- Mobile broadband and open platforms open for OTT services (e.g. VoIP)
Mobile Trends

Mobile Operator Challenges

Opportunities and way forward
Mobile data explosion continues

In Telenor Hungary 140% mobile data traffic growth in 2010

Global mobile data traffic nearly tripled in 2010

By 2015 mobile data traffic will increase 26 fold over 2010

Europe will account for over 30%

2/3 of mobile data traffic will be video by 2015
Decoupling of revenues and traffic volume

Need better network efficiency and heterogeneous network base
Mobile Trends

Mobile Operator Challenges

Opportunities and way forward
Future mobile data communications demands LTE

- **GSM**
  - Speech
- **3G**
  - Small screen data
  - Speech
- **LTE**
  - Large screen data
  - VoIP

**Mobile voice and data**

**New standard for mobile broadband**
LTE frequency band availability

Higher frequencies for capacity
Lower frequencies for coverage and in-building penetration
Coverage of rural areas requires low frequency spectrum

**Effect of frequency on range and capex**

Coverage of rural areas at about 30% of the cost of 2100 MHz

**Figure 2.** The propagation characteristics of spectrum

Source: BBC R&D.

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Capex as a percentage</th>
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<tbody>
<tr>
<td>700</td>
<td>100%</td>
</tr>
<tr>
<td>850</td>
<td>126%</td>
</tr>
<tr>
<td>2100</td>
<td>328%</td>
</tr>
<tr>
<td>2500</td>
<td>455%</td>
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<tr>
<td>3500</td>
<td>675%</td>
</tr>
<tr>
<td>5800</td>
<td>1230%</td>
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</tbody>
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The need for thousands of extra base station sites removed
The right spectrum policy is key to unleash the mobile broadband potential

- Harmonized release of the 800 MHz band in the EU for wireless broadband by 1 Jan 2013 should be a priority.
- Harmonisation creates economies of scale thereby lowering costs for consumers and facilitates seamless services across borders.
- EU should intensify cross-border coordination efforts towards the countries on its borders.
- Governments should assign harmonised spectrum based on flexible and least restrictive license conditions.
- Ensure transparent and objective spectrum management based on sound and predictable conditions.
- The level of spectrum fees should not be determined by fiscal priorities.
Mobile broadband is part of the solution for Europe

Healthcare  Transportation  Utilities  Consumer Electronics  Government

Source: GSMA
Thank you