

Session 5: Towards a high-bandwidth, low carbon future

Power consumption and energy efficiency of fixed and mobile telecom networks

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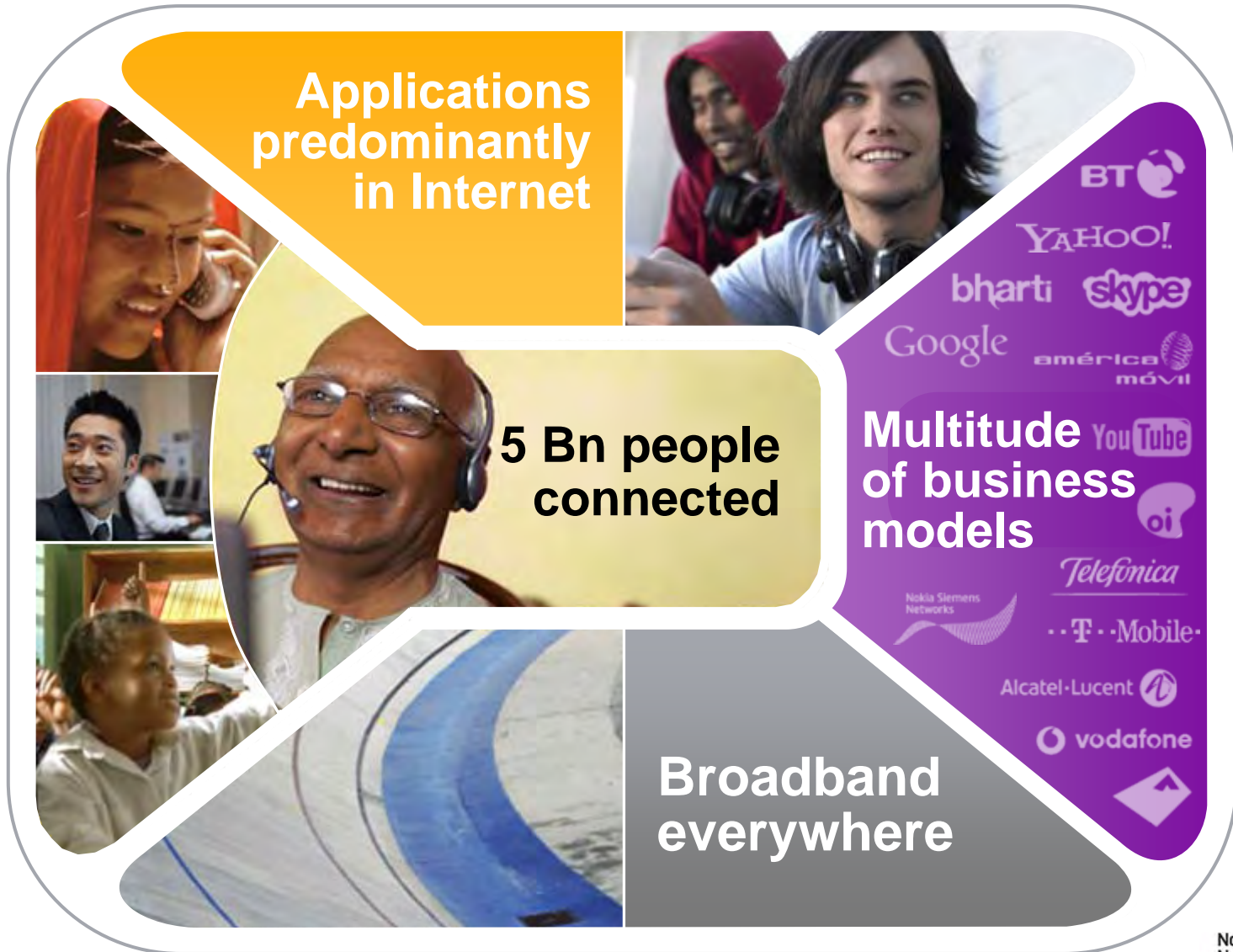
April 2008

Nokia Siemens Networks

- 2007 Q2-Q4 net sales (operative) of about 11.7 billion Euro
- 1400 customers in 150 countries
- Over 1 billion connections served
- Market Positions
 - No. 2 in Wireless Networks
 - No. 2 in Operator Services
 - No. 3 in Wireline Networks
- About 58,000 employees
- Our R&D team works across 40 development centers, representing all the world's technology hotspots. Major R&D sites: Munich, Helsinki, Beijing and Silicon Valley



Our vision 2015 – the world connected



Our environmental vision



World Connected

Net positive impact on environment

Combining environmental and business benefits

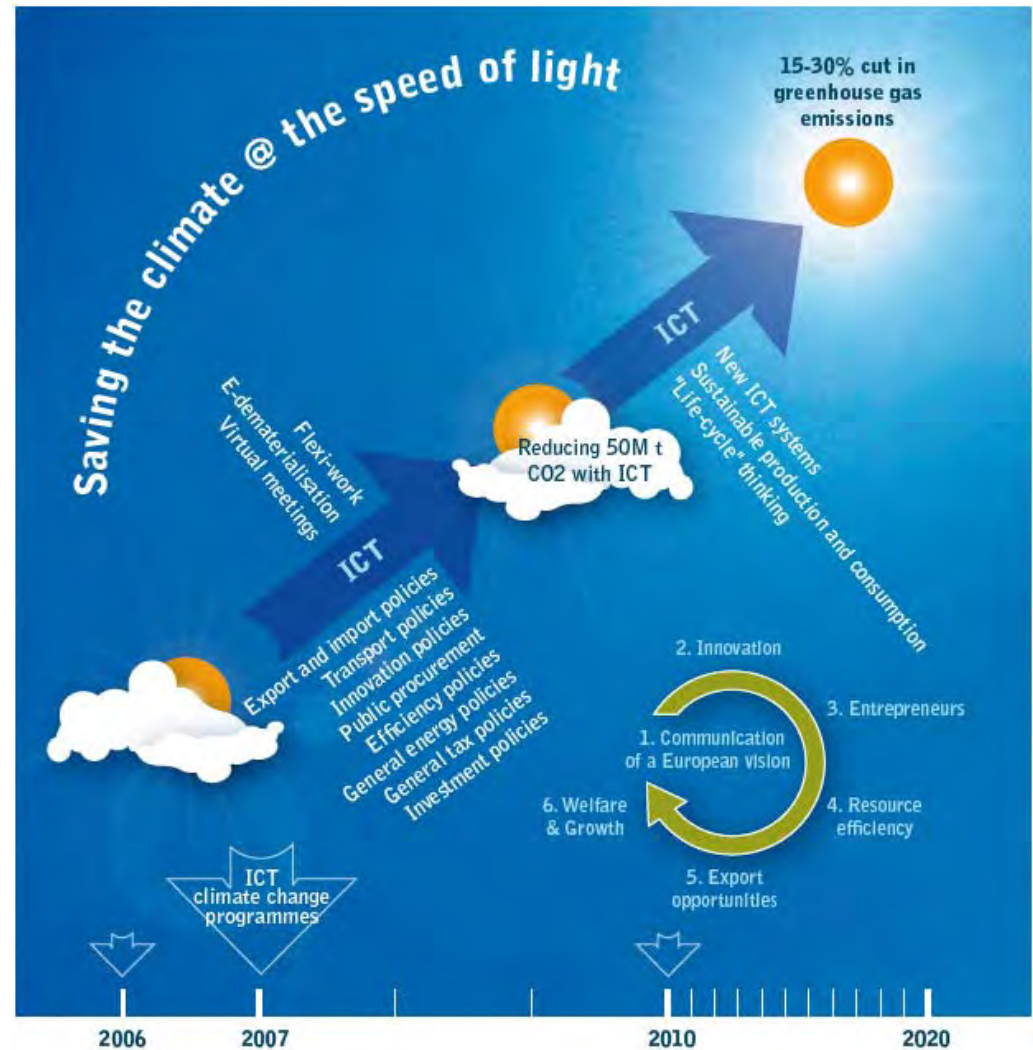
Maximizing positive influence

Minimizing environmental footprint



Combining environmental and business benefits

- 50Mt annual CO₂ savings are possible within the **EU** with the support of ICT by 2010
- 50Mt CO₂ are equivalent to 100TWh of electrical energy
- 100TWh electrical energy require ~300TWh heat, worth **3B€ of oil** (1€/l)
- 100TWh are worth **7B€ of electricity**

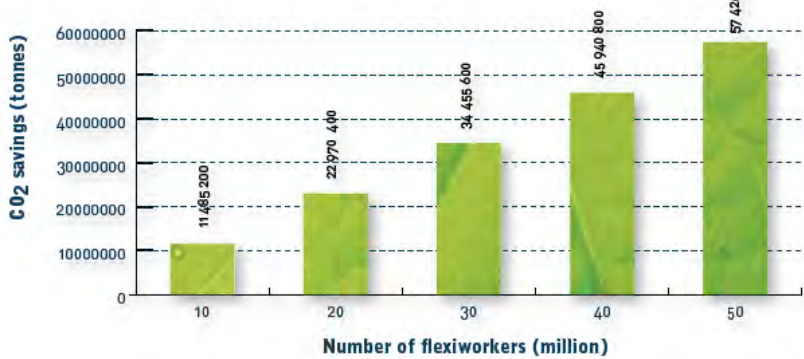


Maximizing positive ITC influence – Europe

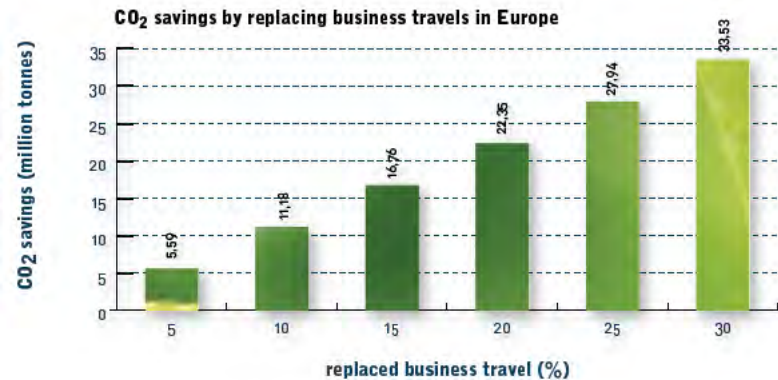
Business travel reduction

Flexi-work vs. commuting:
11,5 - 57,5 Mt savings

Annual CO₂ savings by flexiworkers



Business travel vs. video conferencing:
5,6 - 33,5 Mt savings

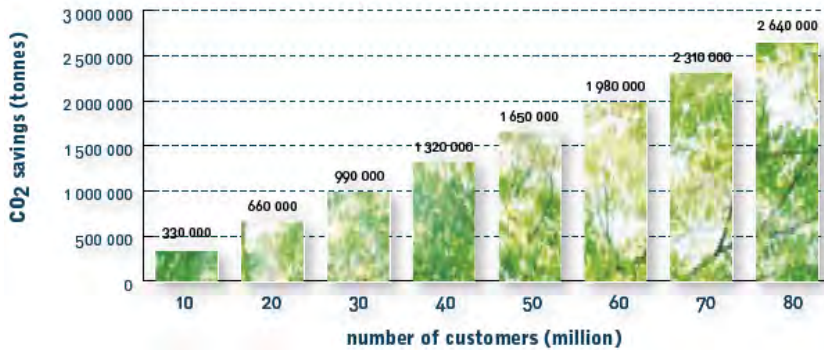


Maximizing positive ITC influence – Europe

Dematerialization

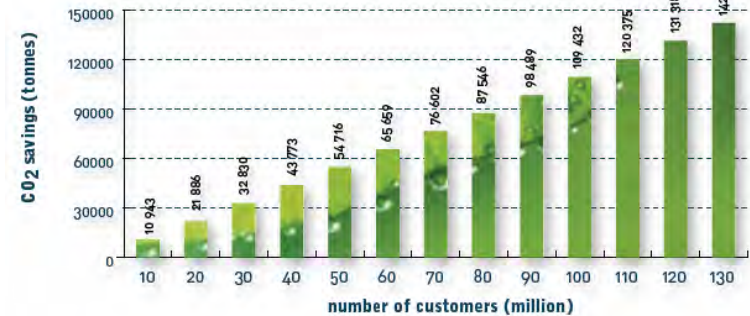
Virtual vs. physical answering machine:
 0,3 – 2,6Mt savings
 (1Mt for 20% EU15)

CO₂ savings : virtual vs. physical answering machine



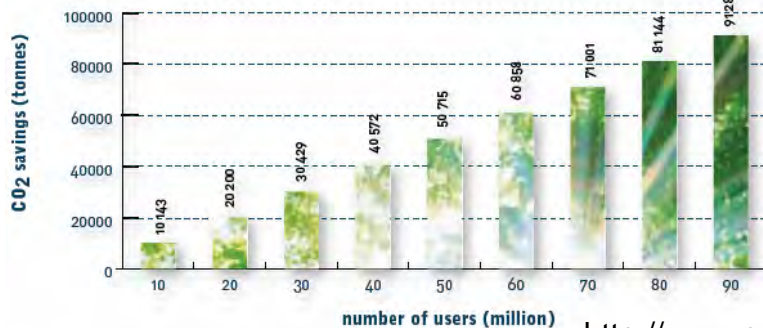
Telco online vs. paper billing:
 30 – 150kt savings
 (0.49Mt for all EU15)

Possible CO₂ savings by online billing



Online taxation vs. paper:
 20 – 100kt savings

CO₂ savings by web-based taxation



Connectivity brings
 convenience,
 economic and
 environmental
 benefits

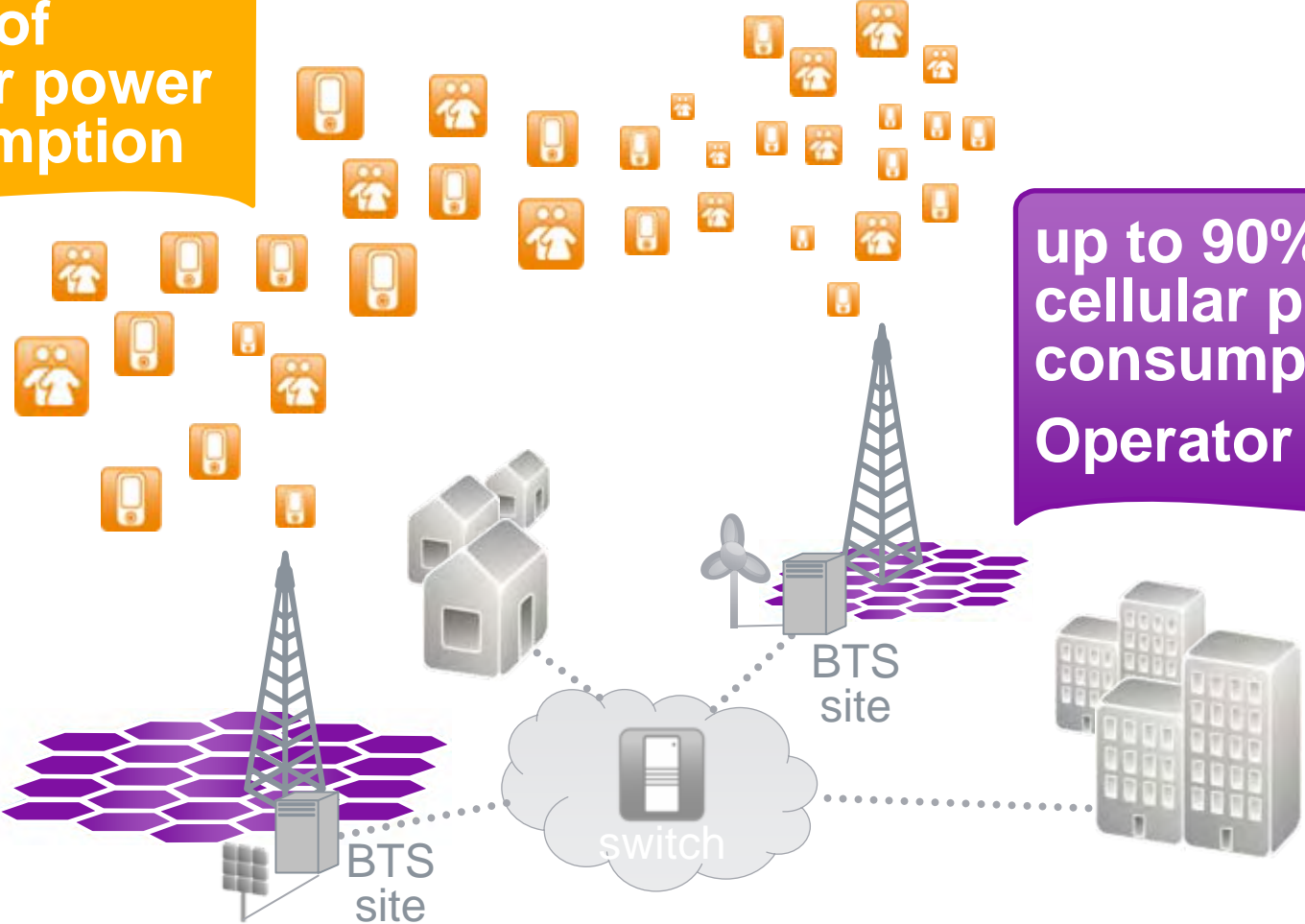
http://www.panda.org/news_facts/publications/ict/index.cfm



Minimizing footprint: Wireless cellular networks

~ 10% of cellular power consumption

up to 90% of cellular power consumption = Operator OPEX

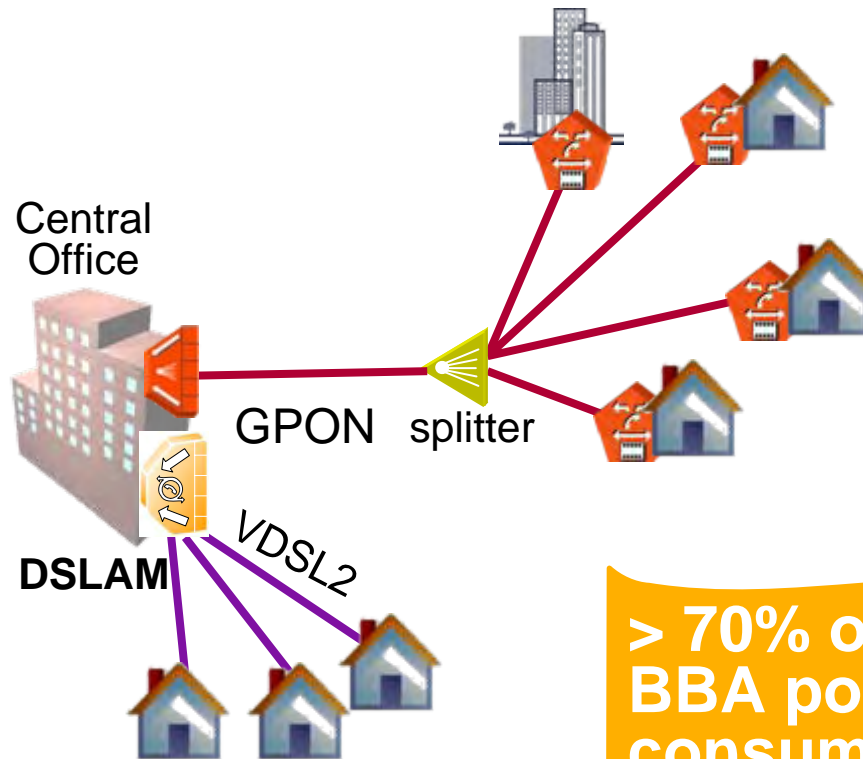


Nokia Siemens Networks wireline and wireless networks installed base



Minimizing footprint: Fixed broadband access

**< 30% of
BBA power
consumption =
Operator OPEX**



**> 70% of
BBA power
consumption
= distributed**

Principal differences between fixed and mobile networks

Mobile cellular network

- The dominating energy consumption is the operator driven network.
- Operator OPEX constraints are an efficient instrument to drive energy efficiency of cellular networks
- Efficiency improvements in cellular base stations can compensate the growing demand

Fixed (wire-line) access

- The dominating energy consumption occurs in the user segment
- The wide distribution dilutes the energy consumption to an amount which is neglectable for the single user
- Efficiency improvements of copper based BBA can't compensate increasing demand
- The transition from copper to optical fiber allows dramatic energy savings despite growing demand

Addressing our customers' challenges

Integrated approach

