

# ICT for global access by meeting the environmental challenge

Werner Mohr

Head of Research Alliances, Nokia Siemens Networks, Germany

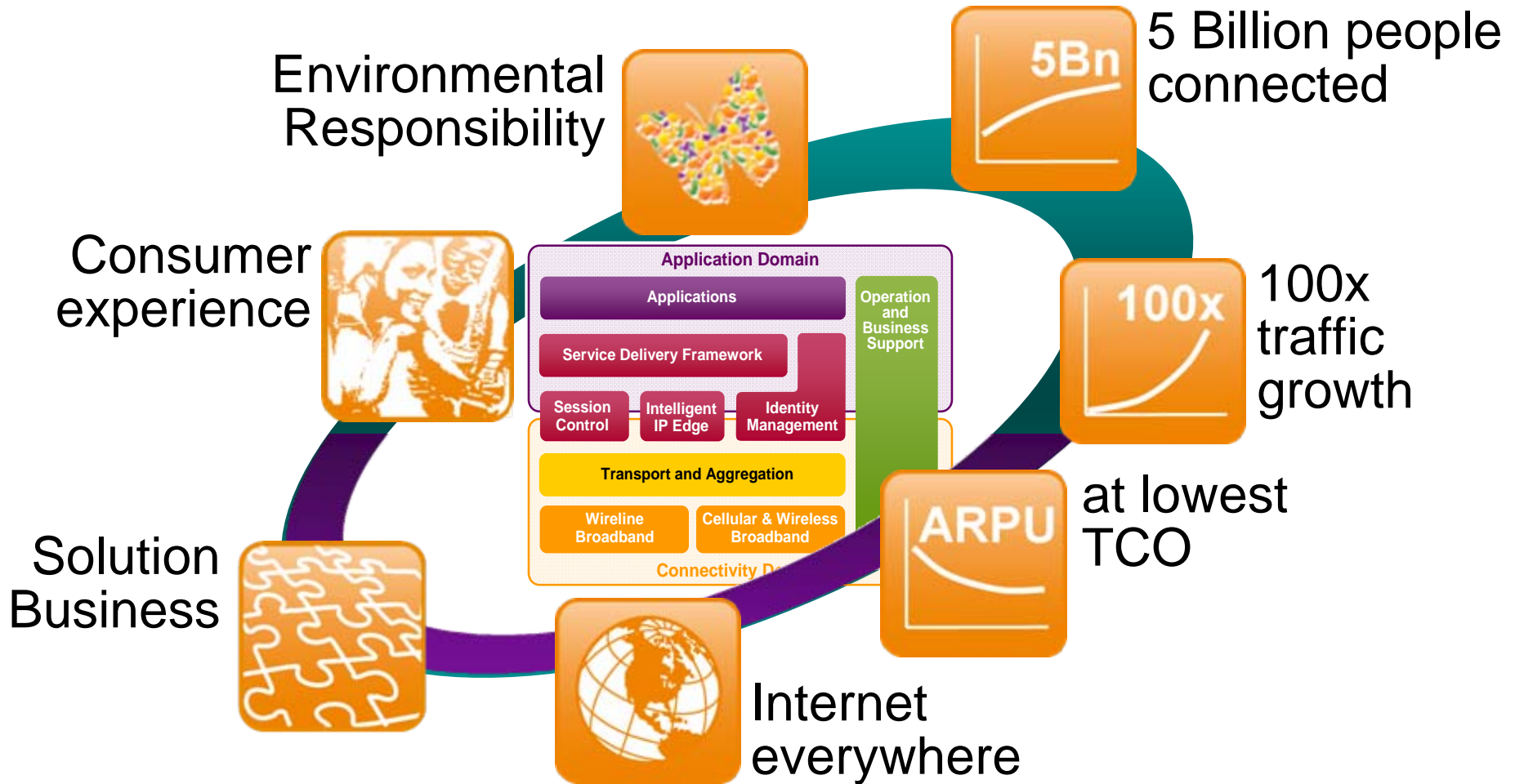
*An event organised by the European Commission (DG INFSO)  
& the South Korean Ministry of Knowledge Economy (MKE)*

*December 1-2, 2008  
Radisson SAS Royal Hotel  
Brussels, Belgium*



- Trends in ICT
- ICT growth areas
- New growth markets
- ICT and CO<sub>2</sub>
  - ✓ Impact on ICT infrastructure
  - ✓ Impact by ICT infrastructure
- Conclusions







**5 Billion People connected**

Main growth in mobile subscriptions from new growth markets



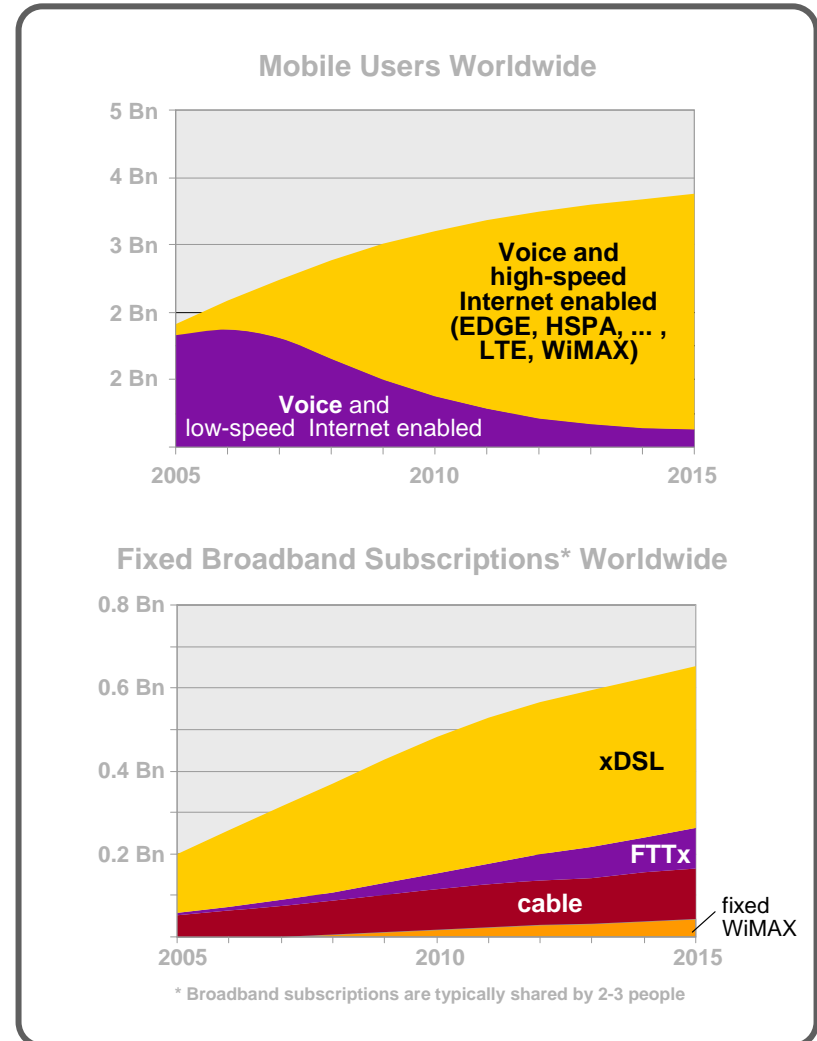
**4 Billion mobile users**

Majority can be always online via mobile high-speed Internet access technologies



**2 Billion fixed broadband users**

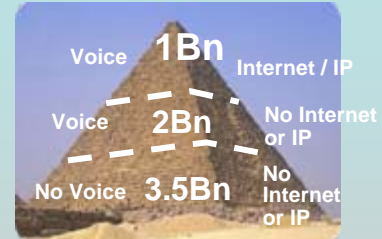
Wireline Broadband will facilitate usage of applications like TV and/or video streaming.



Source: Nokia Siemens Networks estimations based external forecasts (Ovum, Strategy Analytics)

### **Internet and Communication for the next Billions**

Enable affordable and easy Internet and communication services for new growth markets



### **Energy and Environment**

Innovate and promote advanced technology usage for sustainable green future

### **Optimized Infrastructure**

simplified network architectures, higher speed at lower cost and simplified management for 100x traffic at today's TCO



### **Internet Service Solutions**

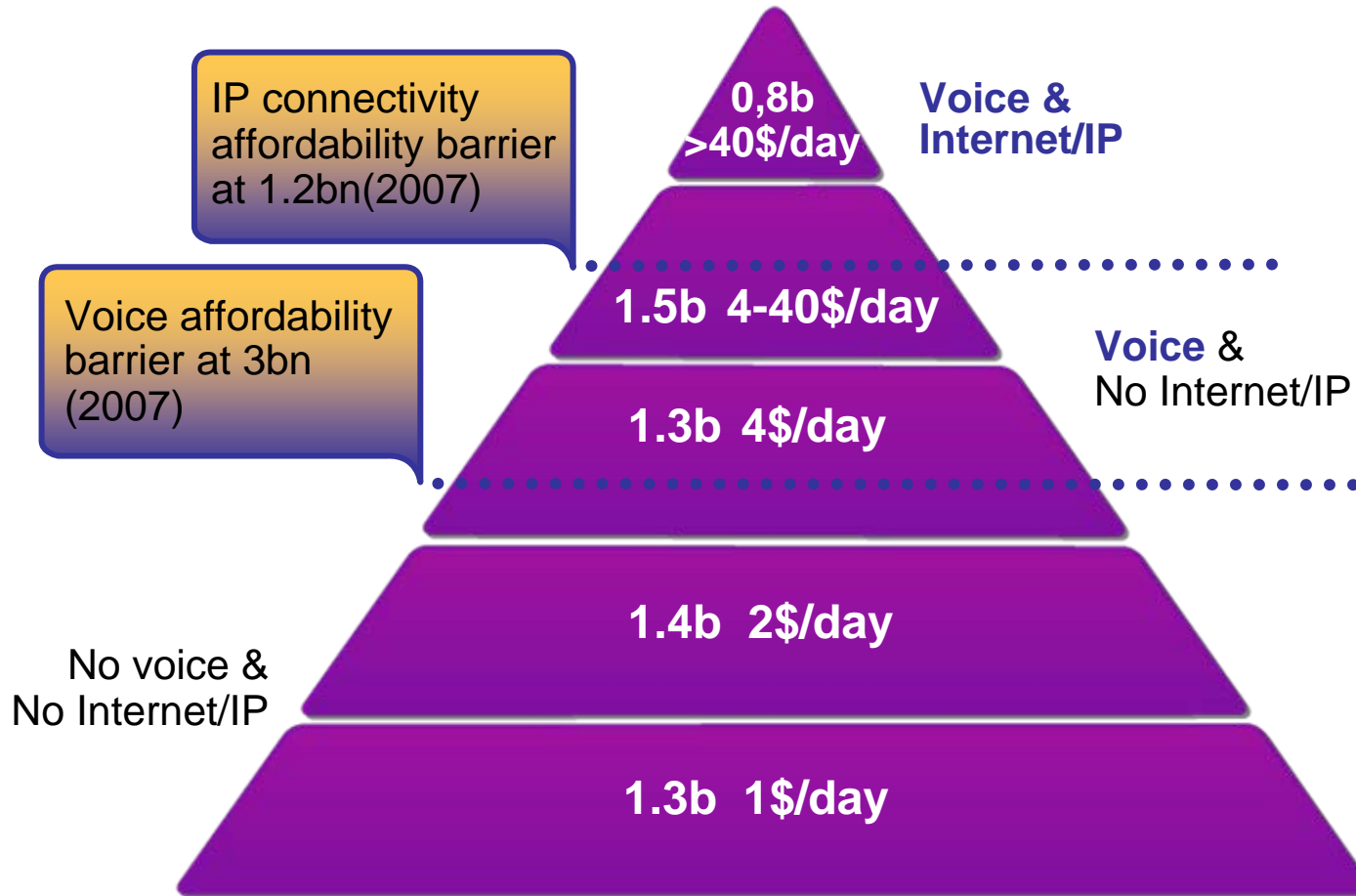
Access and device independent applications providing valuable end user service through a variety of business models

### **Operator Business Processes**

Increasing operational efficiency through end-to-end (devices, connectivity, services and subscribers) management and automation, including support for new business models.



## Global Income Pyramid



Source: Nokia Siemens Networks / Nokia Worldmap 2006, NET Strategy & Technology



## Solutions for affordable voice and data connectivity in New Growth Markets

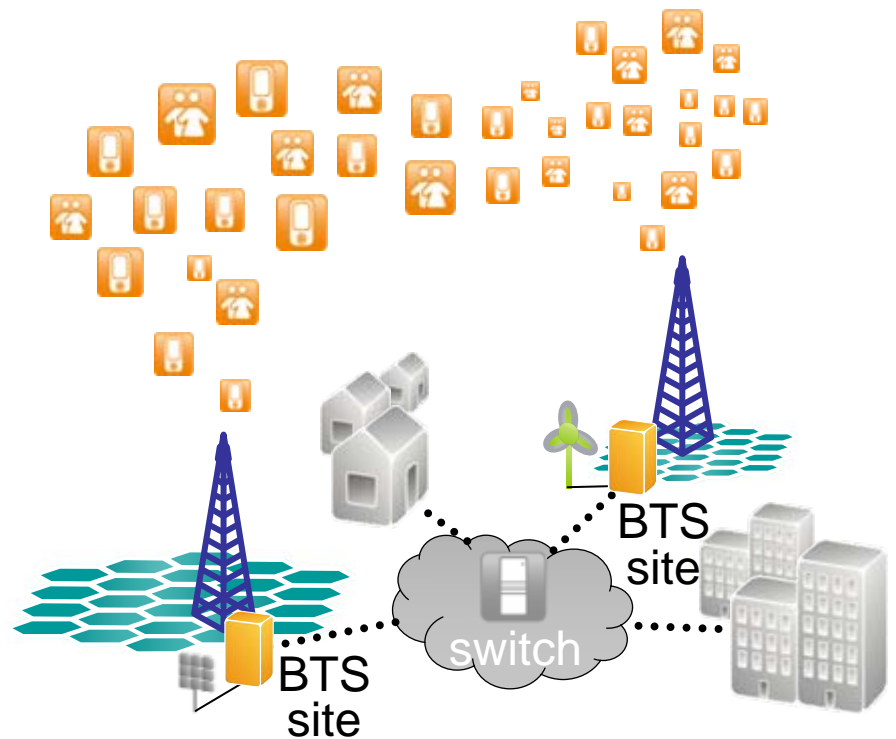
- 80 % of new subscriber growth will come from new growth markets, Internet starting to take up
- Lower income levels require innovative business models and end-to-end approach
- Nokia Siemens Networks leads innovation for new growth market specific solutions for affordable voice and data connectivity



- Trends
  - ✓ Data traffic is increasing by a factor of 100 between 2007 and 2015
  - ✓ Energy consumption is increasing approximately by 16 – 20 % / year
- Facts on Energy consumption
  - ✓ 3 % of worldwide energy consumed by ICT infrastructure
  - ✓ 2 % of worldwide CO<sub>2</sub> emissions corresponding to
    - 25 % of worldwide CO<sub>2</sub> emissions by cars and
    - 100 % of worldwide CO<sub>2</sub> emissions by airplanes
- Decrease of energy consumption of communication infrastructure essential with increasing number of users and traffic to keep or reduce contribution to worldwide CO<sub>2</sub> emissions
- However, important to use ICT to reduce the other 98 % of CO<sub>2</sub> emissions by other sectors

- Reduce energy consumption in all parts of the network
- Build networks with less sites
- Share resources
- Use renewable power in remote sites or to replace grid power
- Use intelligent services to minimize site visits
- Introduce services and applications that empower consumers and businesses to make right choices

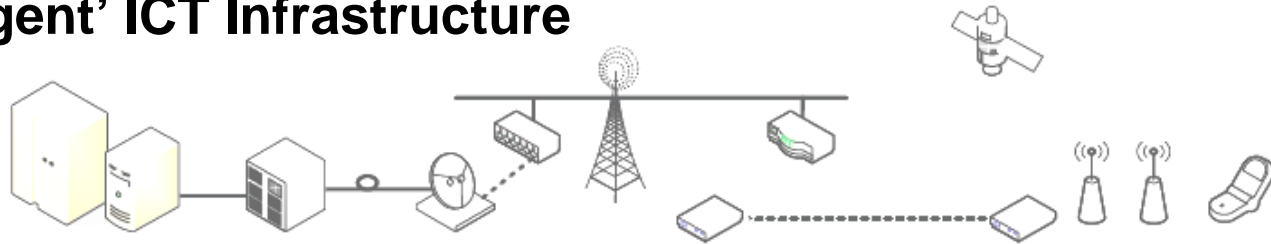
Wireline and wireless networks installed base



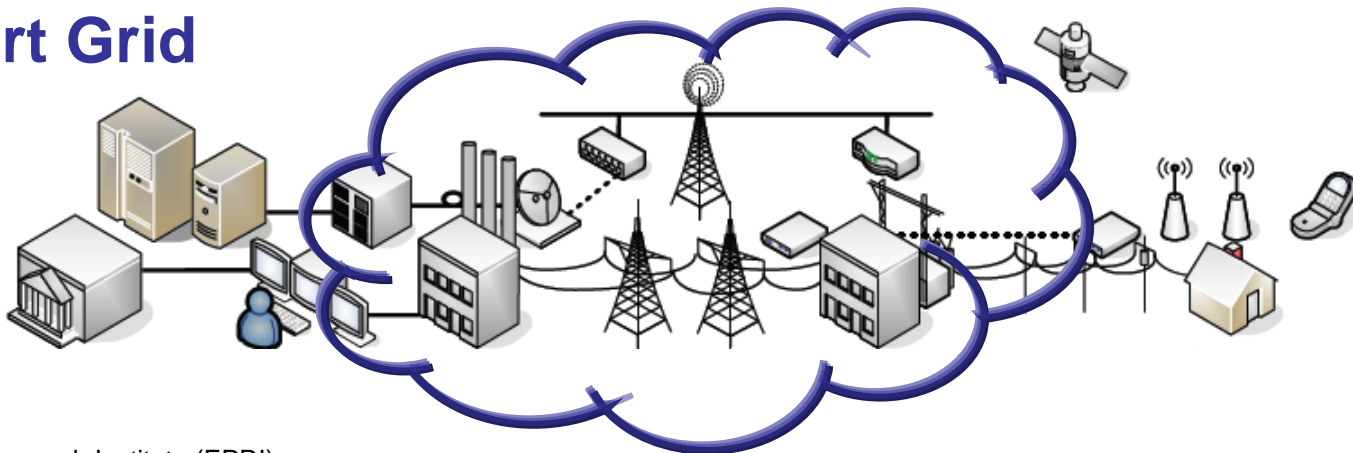
## Electrical 'blind' Infrastructure

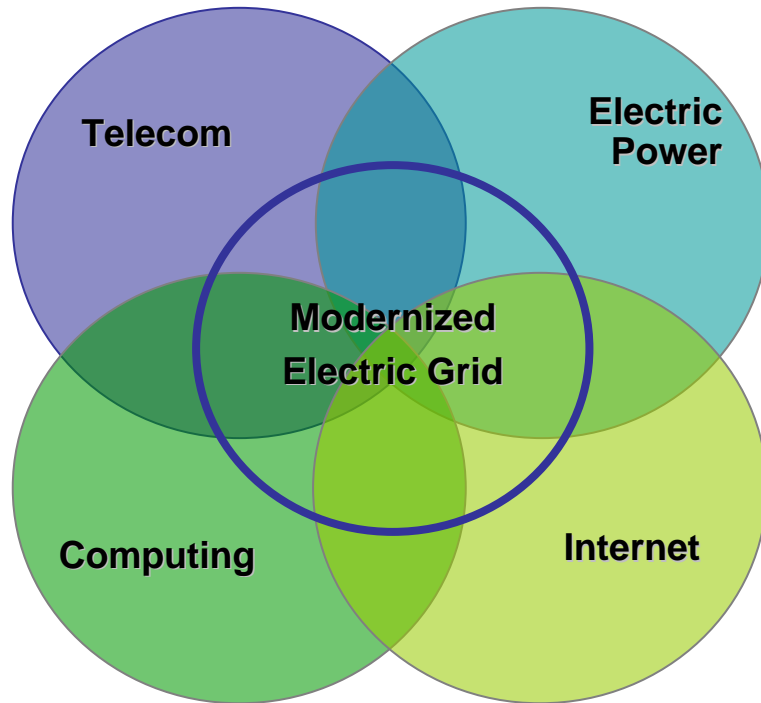


## 'Intelligent' ICT Infrastructure



## Smart Grid





- Decentralized control and connectivity
- Energy trading systems
- Intelligent SW agents for consumption control / Smart Meters
- Real time demand management / forecasting
- Systems for advanced diagnosis and self repair
- Security Concepts
- End-to-end consulting, system integration and operation
- ... and many more



- Communication traffic and number of users increasing further
- Growth of users mainly in emerging markets
- Traffic growth globally
- CO<sub>2</sub> emissions are an increasing challenge for all sectors
- Sustainable growth only possible by
  - ✓ increasing energy efficiency of communications infrastructure and
  - ✓ using ICT to use energy in other sectors more efficiently



Werner Mohr was graduated from the University of Hannover, Germany, with the Master Degree in electrical engineering in 1981 and with the Ph.D. degree in 1987. From 1987 – 1990 he has been senior engineer at the Institute of High-Frequency Technology at the University of Hannover.

Dr. Werner Mohr joined Siemens AG, Mobile Network Division in Munich, Germany in 1991. He has been involved in the European RACE-II Project ATDMA. From 1995 to 1996 he was active in ETSI SMG5 for standardization of UMTS. Since December 1996 he was project manager of the ACTS FRAMES Project until the project finished in August 1999. This project developed the basic concepts of the UMTS radio interface. Since April 2007 he is with Nokia Siemens Networks GmbH & Co. KG in Munich Germany. Werner Mohr is Head of Research Alliances at Nokia Siemens Networks. He was involved in the 5th Framework Program of the EU. Werner Mohr was the coordinator of the WINNER Project in Framework Program 6 of the European Commission and chairman of WWI (Wireless World Initiative) and he is now coordinator of the Eureka Celtic project WINNER+. In addition, he is vice chair of the eMobility European Technology Platform. Werner Mohr was chair of the "Wireless World Research Forum – WWRF" from its launch in August 2001 up to December 2003. He is member of VDE and Senior Member of IEEE. 1990 he received the Award of the ITG (Information Technology Society) in VDE (Association for Electrical, Electronic & Information Technologies, Germany). He is board member of ITG in VDE, Germany for the term 2006 to 2008 and re-elected for the term 2009 to 2011. Werner Mohr is co-author of a book on "Third Generation Mobile Communications".





**Thank you for your attention!**

**Werner Mohr**  
Head of Research Alliances, Nokia Siemens Networks, Germany  
[werner.mohr@nsn.com](mailto:werner.mohr@nsn.com)

