MÜNCHNER KREIS

Congress „Next Generation Communication“

Next Generation Networks Between Hype and Reality

Dr. Hans-Peter Petry

München, Juni 2010

Consulting
DETECON

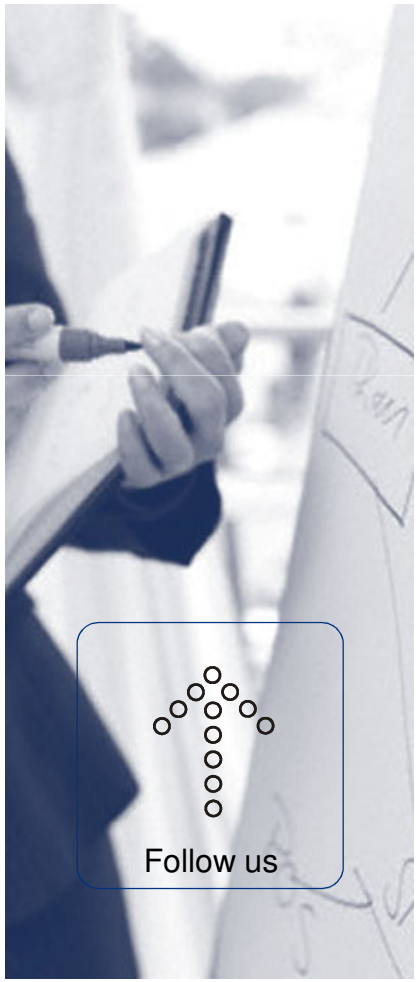
Deutsche Telekom Group

Inhalt

Top 3 Industry Trends

Operators between Scylla and Charybdis

Enormous bandwidth requirements need to be satisfied whereas revenues decline, competition grows and regulatory environments improve slowly.



Strategy & Thought Leadership | Architecture & Design Mastery | Operational Excellence

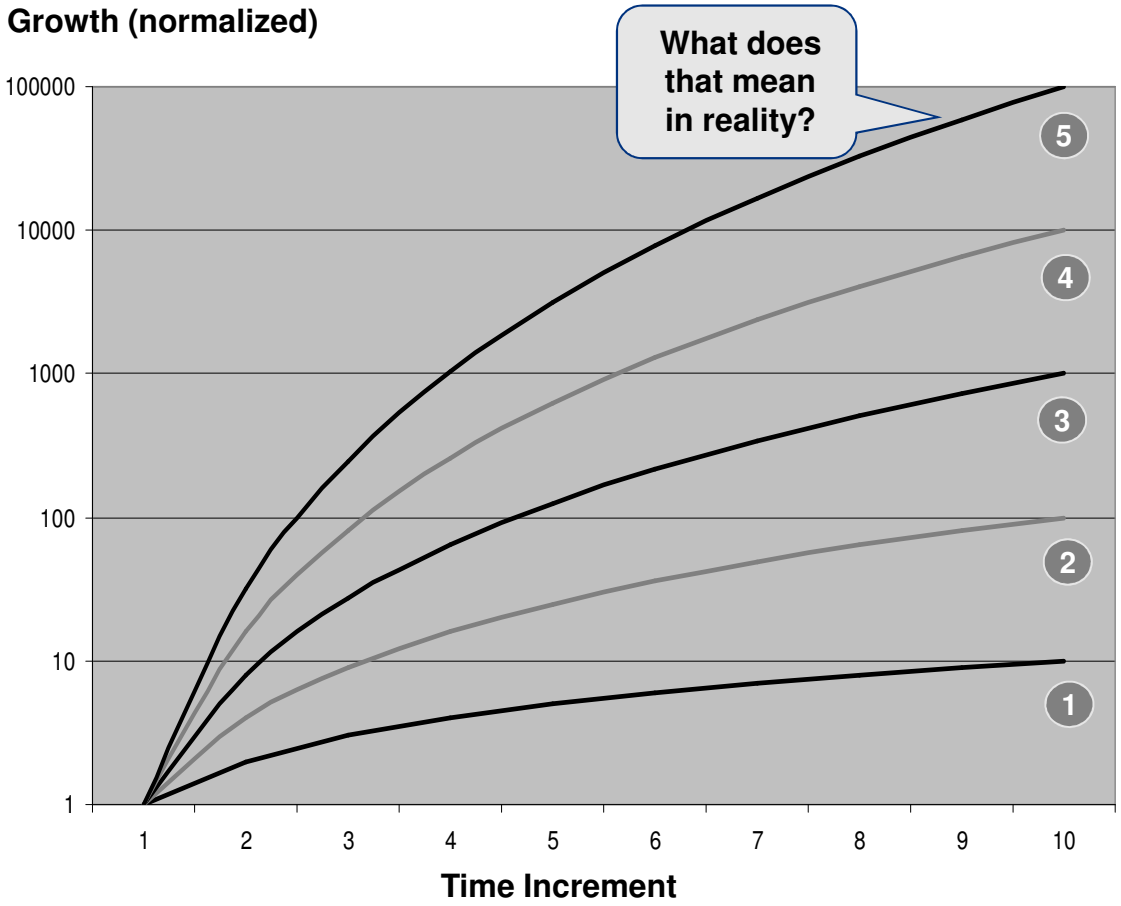
Mastering current top industry challenges end-2-end

- **Unleashing broadband and true broadband mobility**
  Next Generation Network strategies and architectures
- **Turning network investment into return**
  Planning and running NG networks for future services
- **Accelerating growth and change**
  Carrier performance and change management in an NG environment

The Broadband Market

Challenge 1: Disruption rather than evolution

Traffic boom is straining networks. Network performance and quality enters a new age of differentiation. Network evolution only is not an option any more.

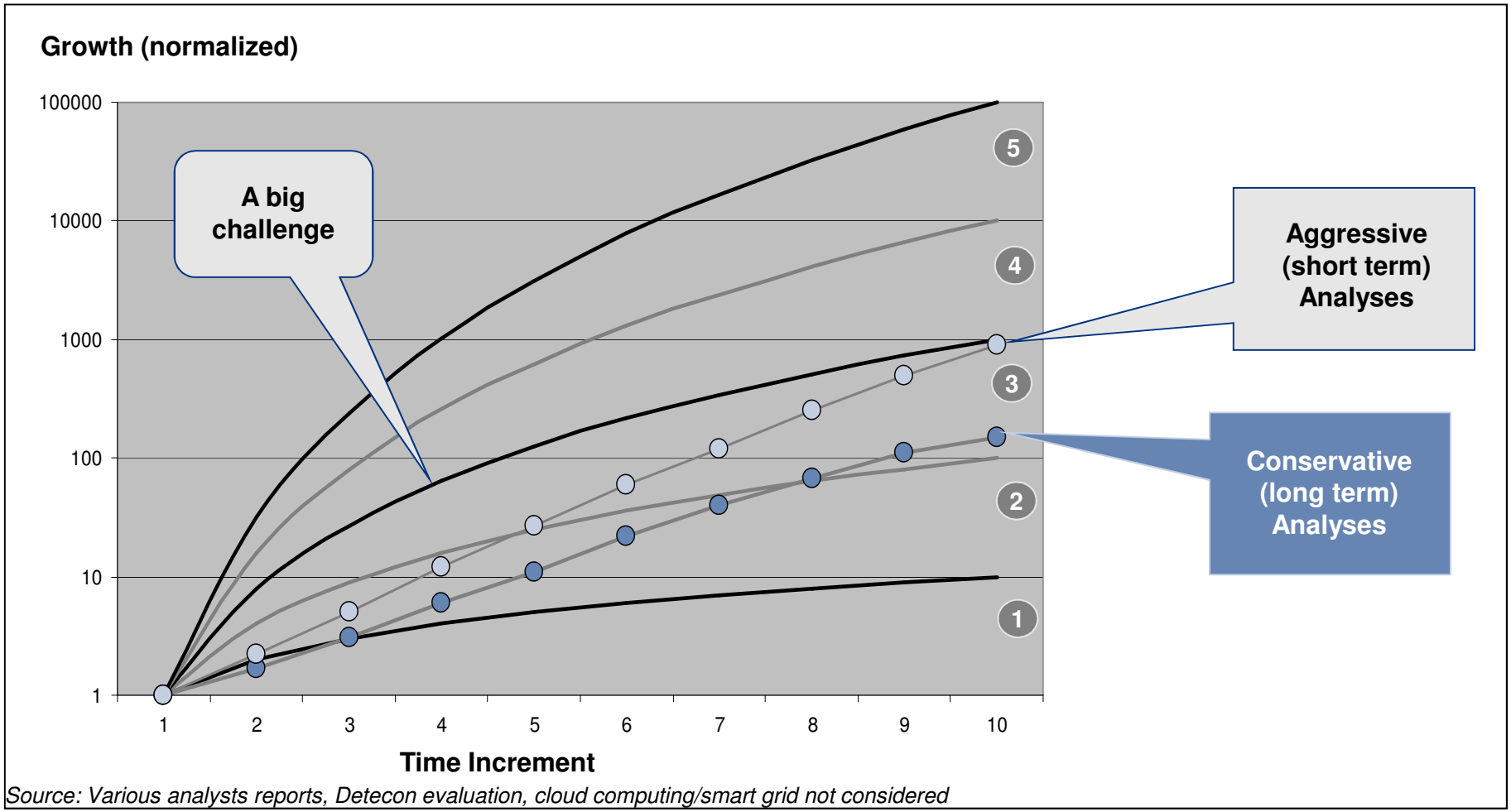


- 5th order (Innovation)
  - Cloud computing, M2M
  - Smart metering, home automation
- 4th Order (User)
  - User activity
  - Attractive apps
- 3rd Order (Devices)
  - Device innovation
  - Device boom
- 2nd Order (Operator)
  - Flatrates
  - User behavior
- 1st Order (Bandwidth)
  - Increasing multimedia content
  - P2P traffic
  - Location based services
  - Augmented reality
  - …

The Broadband Market

Challenge 1: Disruption rather than evolution

Growth effects fortunately do not add independently, they are correlated. The problem remains: Powerful networks become a main differentiator.

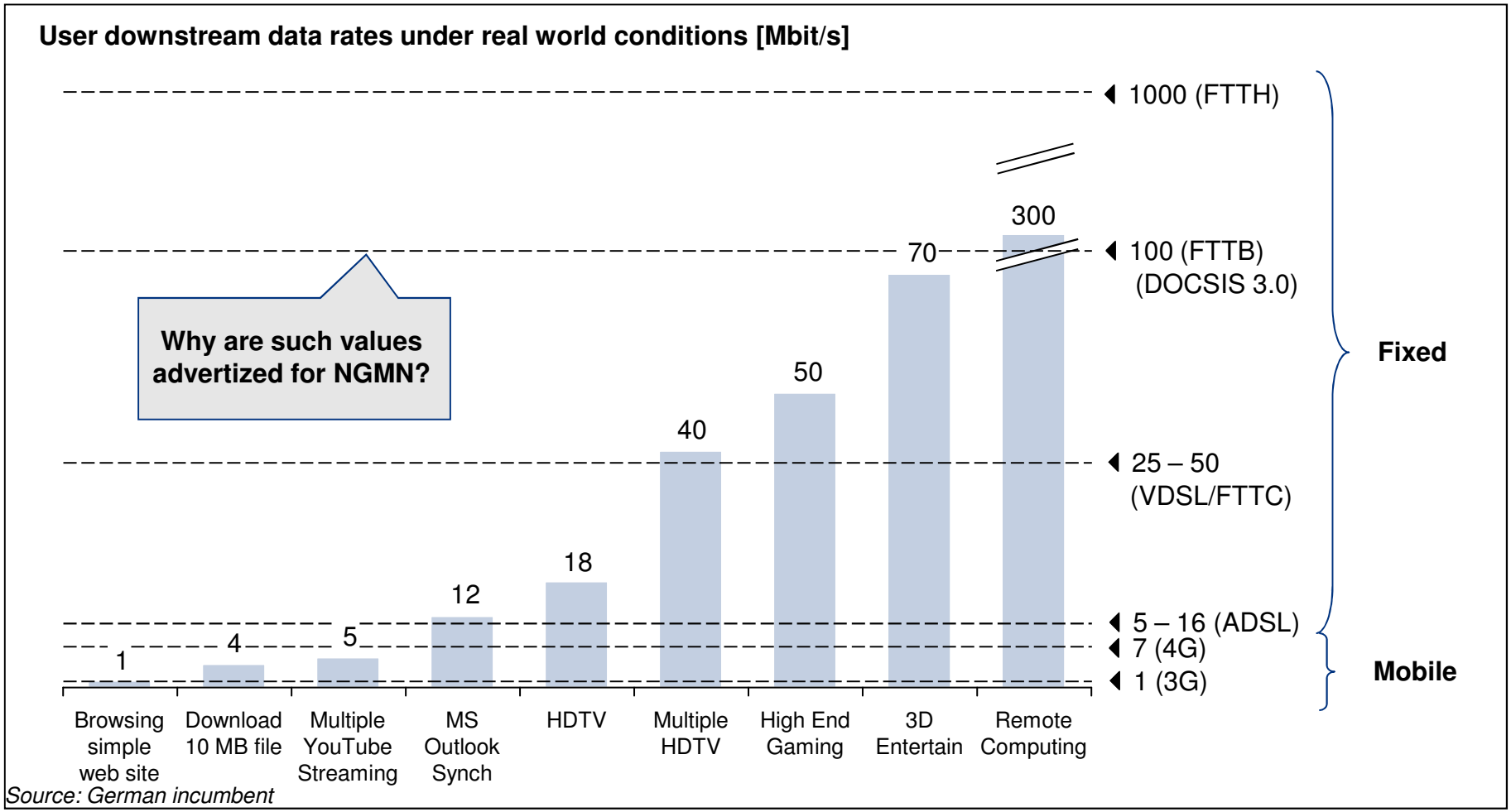


Source: Various analysts reports, Detecon evaluation, cloud computing/smart grid not considered

The Broadband Market

Challenge 2: Main bandwidth requirements are present in the access area

Truly high bandwidth regions still are a domain of fixed physical layers. NGMN is moving towards higher bandwidth areas but limits have to be understood well.

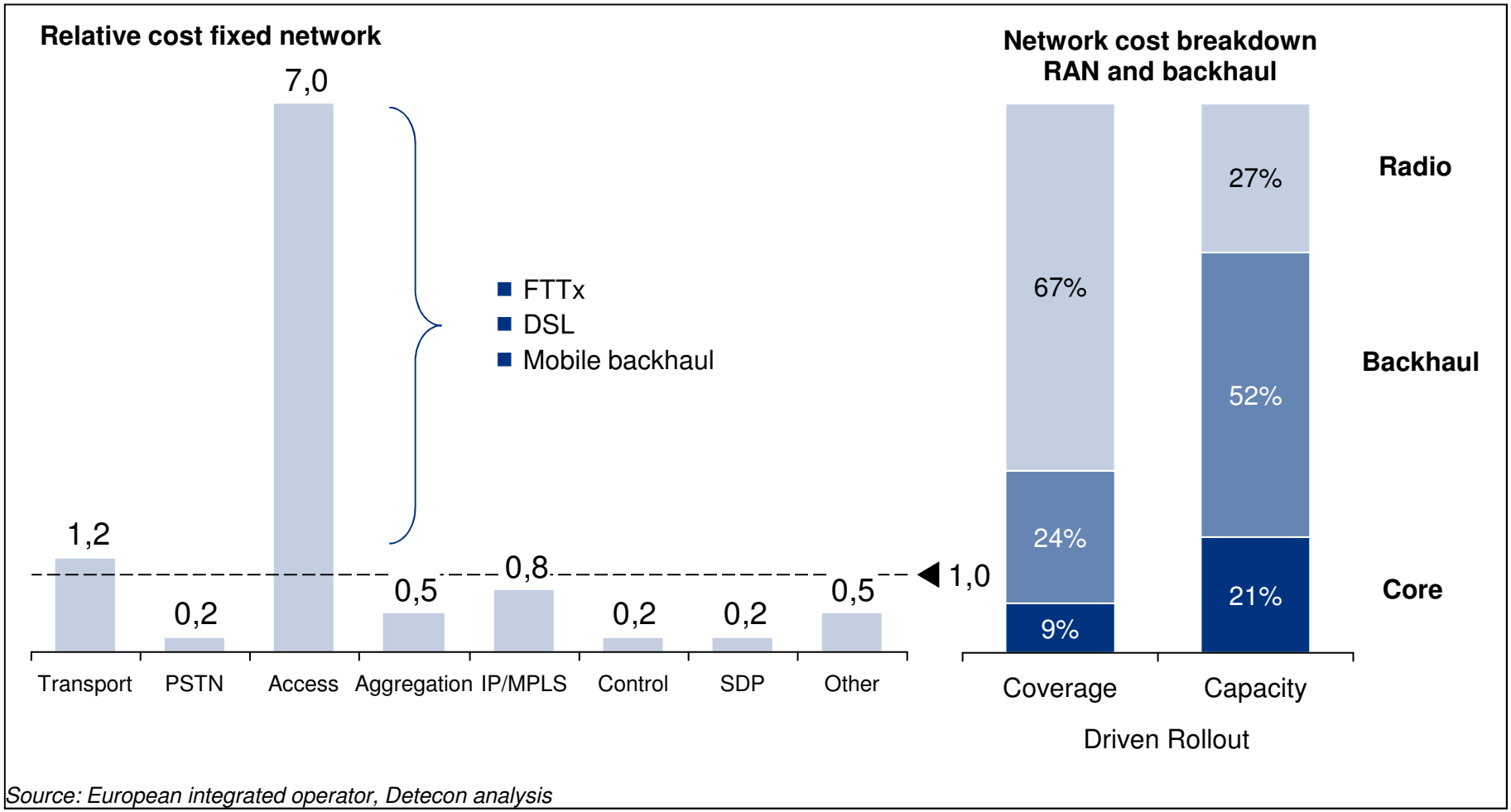


Source: German incumbent

The Broadband Market

Challenge 3: Main capex contribution is located in the access area

A powerful fixed access network is a prerequisite for a powerful mobile network. Both architectural parts need to be optimized simultaneously and in a synergetic way.

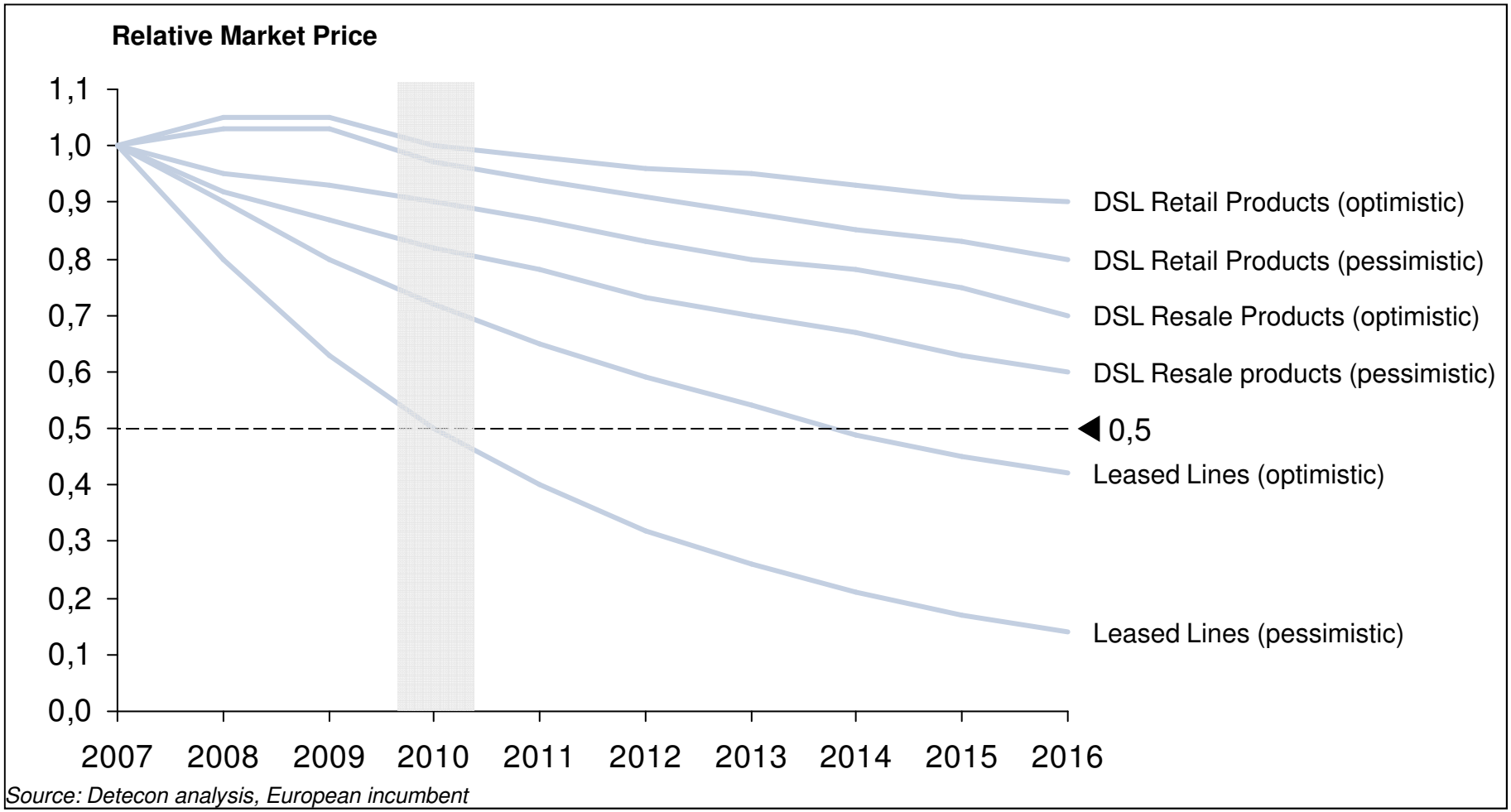


Source: European integrated operator, Detecon analysis

The Broadband Market

Challenge 4: Price erosion of sample (fixed) market offerings will continue

Additional mobile bandwidth can not be transferred into a positive ARPU development, fixed technologies and competition are setting the benchmarks.



Source: Detecon analysis, European incumbent

NGN and NGMN Expectations

General aspects

The most compact definition of NGN has been given as follows: „A broadband managed IP based (multiservice) network“ (OECD, 2008). That sounds simple but is a big change.

Hype/Expectation

General:

- „All IP“
- „Lower capex and opex“
- „Flatter, simpler, cheaper“ (BT21)
- „Differentiated QoS“

NGMN specific:

- „Bandwidth comparable to fixed line“
- „Low latency“
- „Lower cost per bit“

NGN Reality Examples

Don‘t take this too serious – but wireline technology does not seem to be the problem

Sigbritt Löthberg (aged 75, Karlstadt – central Sweden) has the fastest Internet connection worldwide.

40 Gbit/s:

- 1.500 HDTV streams in parallel
- 1 DVD download in 2 sec.
- Long distance fiber

It still has to be installed

The Local:

She mostly used it to dry her laundry...It was a big bit of gear and it got pretty warm. Sure, the guy can get his mother the world's fastest internet connection, but will he ever use some of those millions of Swedish-moneys to buy her a damn dryer? …

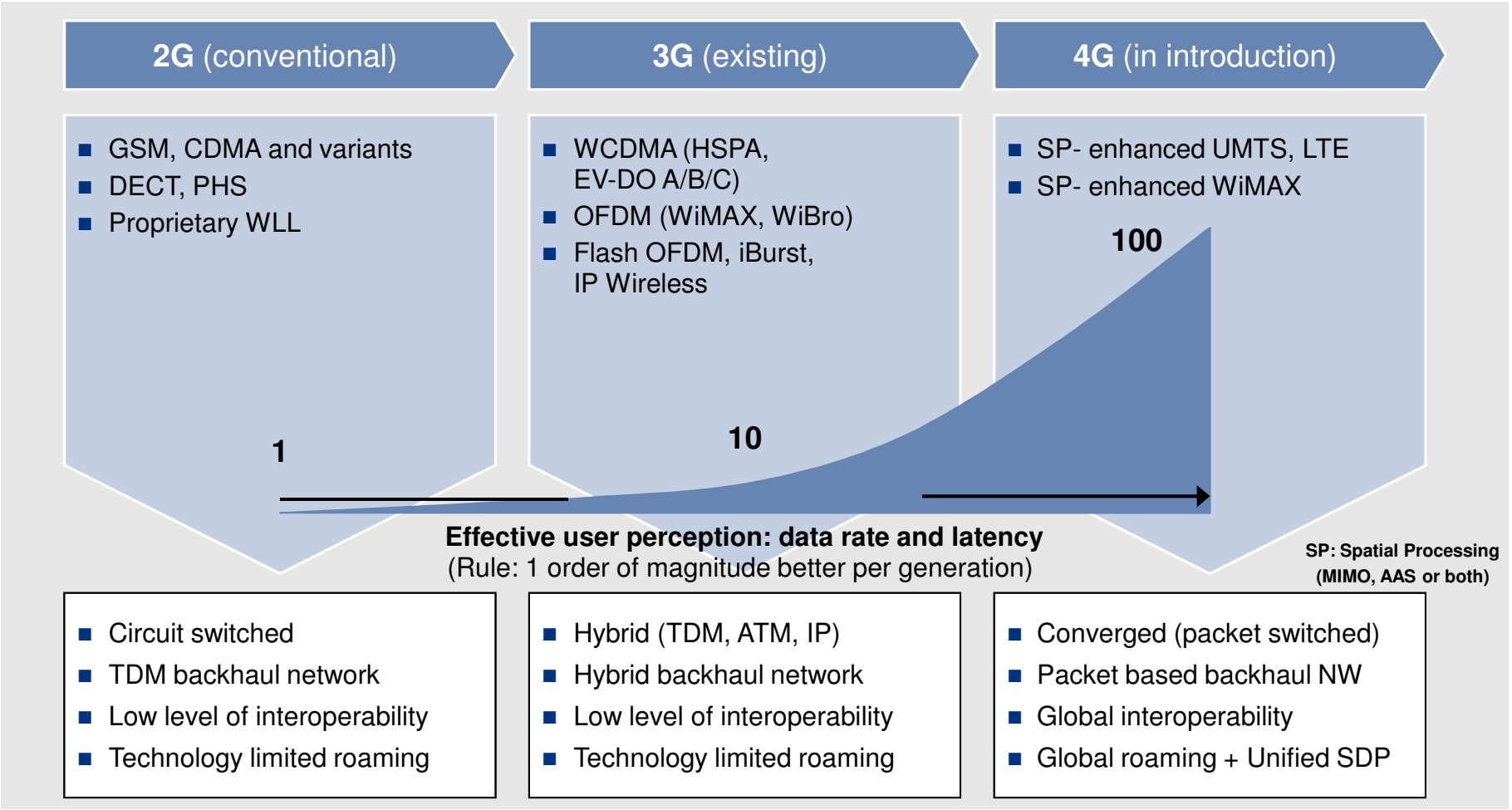
… alas, the gear is gone now, leaving Sigbritt with a relatively sluggish 10 gigabits to play with. Peter has taken the equipment even farther out, to further test his distance theory. Later this summer Sigbritt might get a 100-gigabit system, though, one that, according to Jonsson, can be used for the "neighbors' laundry too."

http://gizmodo.com/374024/40+gigabit-granny-used-worlds-fastest-connection-to-dry-laundry

NGN Reality Examples

NGMN has natural resource limitations and a more complex nomenclature

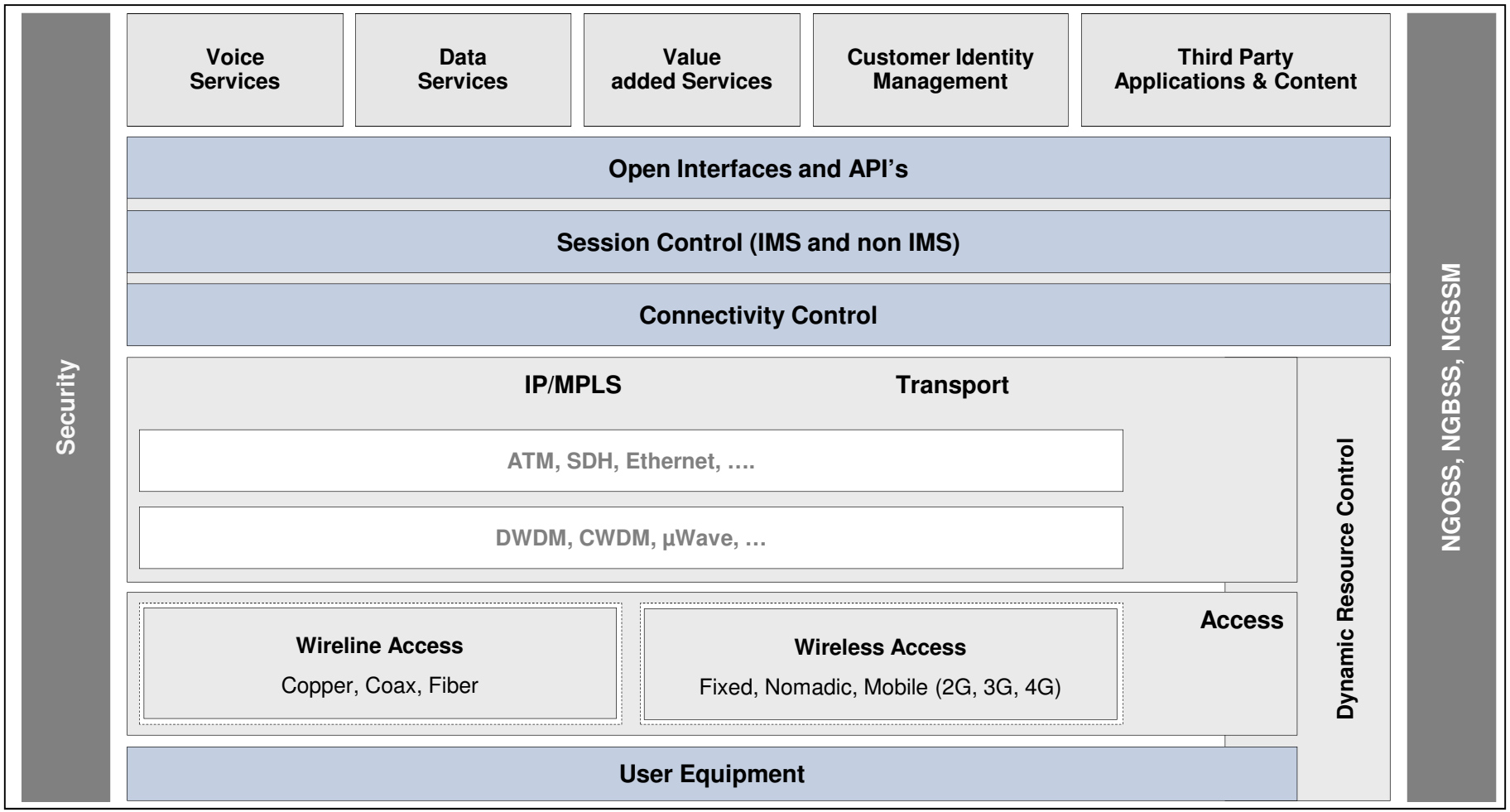
Migration to NGMN has more flavors, is much more complex and is smoother. Besides "all IP" we have to deal with various air interface technologies hence "generations".



NGN Reality Examples

Abstract NGN Reference Model

The “charm” of NGN is based on a clean network logic and network “production” platform with global service and local resource management avoiding legacy “silos”.



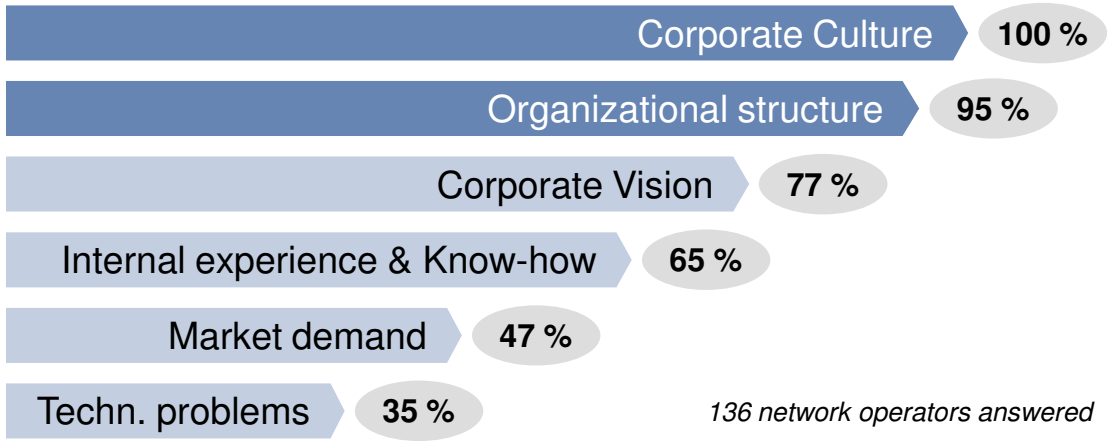
NGN Reality Examples

The problem is to get there: Establish a strong transformation management

The complete transformation of a "traditional" carrier to all IP based service production is a cultural, structural and process challenge.

Barriers

- **Question:** What are the barriers on the way to successful all IP service providing?



136 network operators answered

A Corporate Culture focused on **99,99% Network availability** and **2 years cycle** for product development will be not successful in the future!

Requirements

Changes needed on the way to all IP:

- Organizational structure
- Processes und flows
- Necessary experience
- Head count and assignment

Telco's needs to be faster and more innovative:

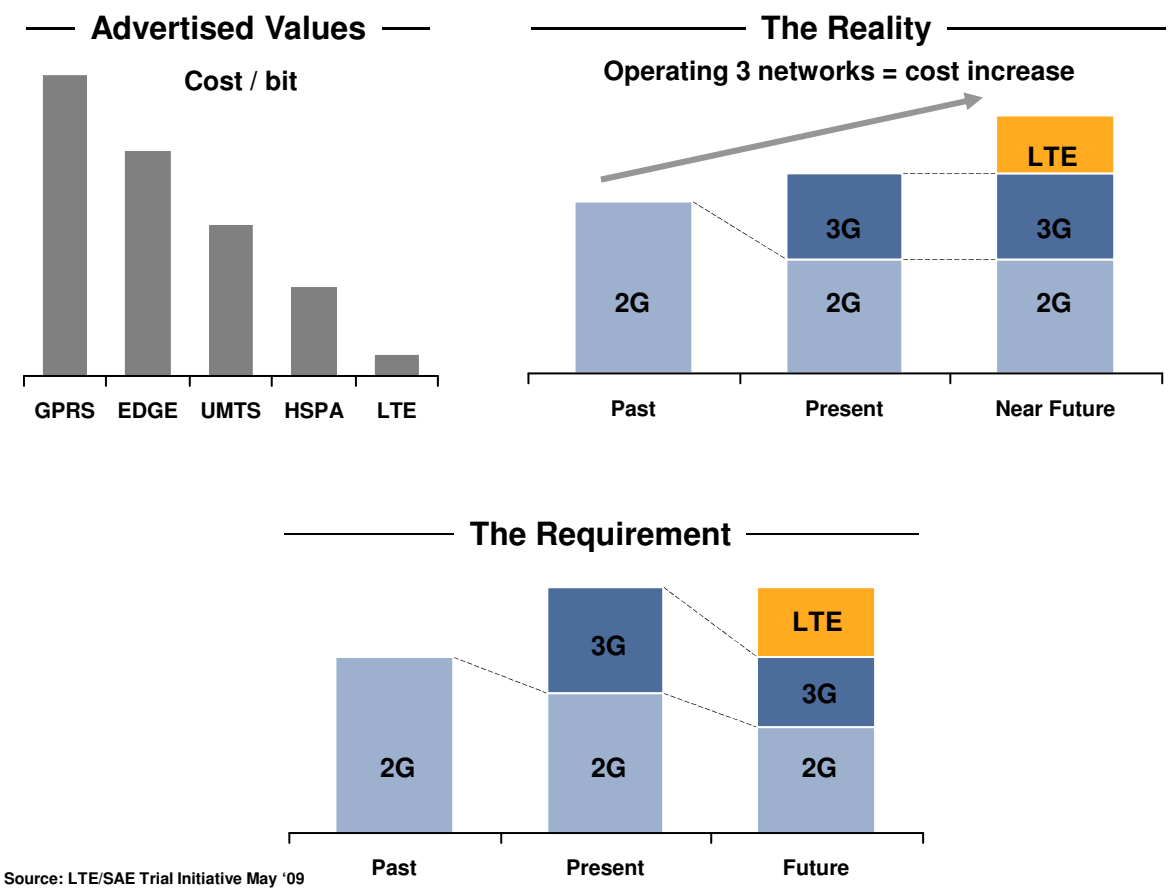
- Use chances
- Encourage and enable the organization (governance)
- Mistakes in case of innovative services are not a disaster

NGN Reality Examples

Economic Analysis, Example LTE

New technologies aim to improve the cost/bit ratio. However, legacy technologies need to be considered as well.

LTE Hype vs. Reality



Source: LTE/SAE Trial Initiative May '09

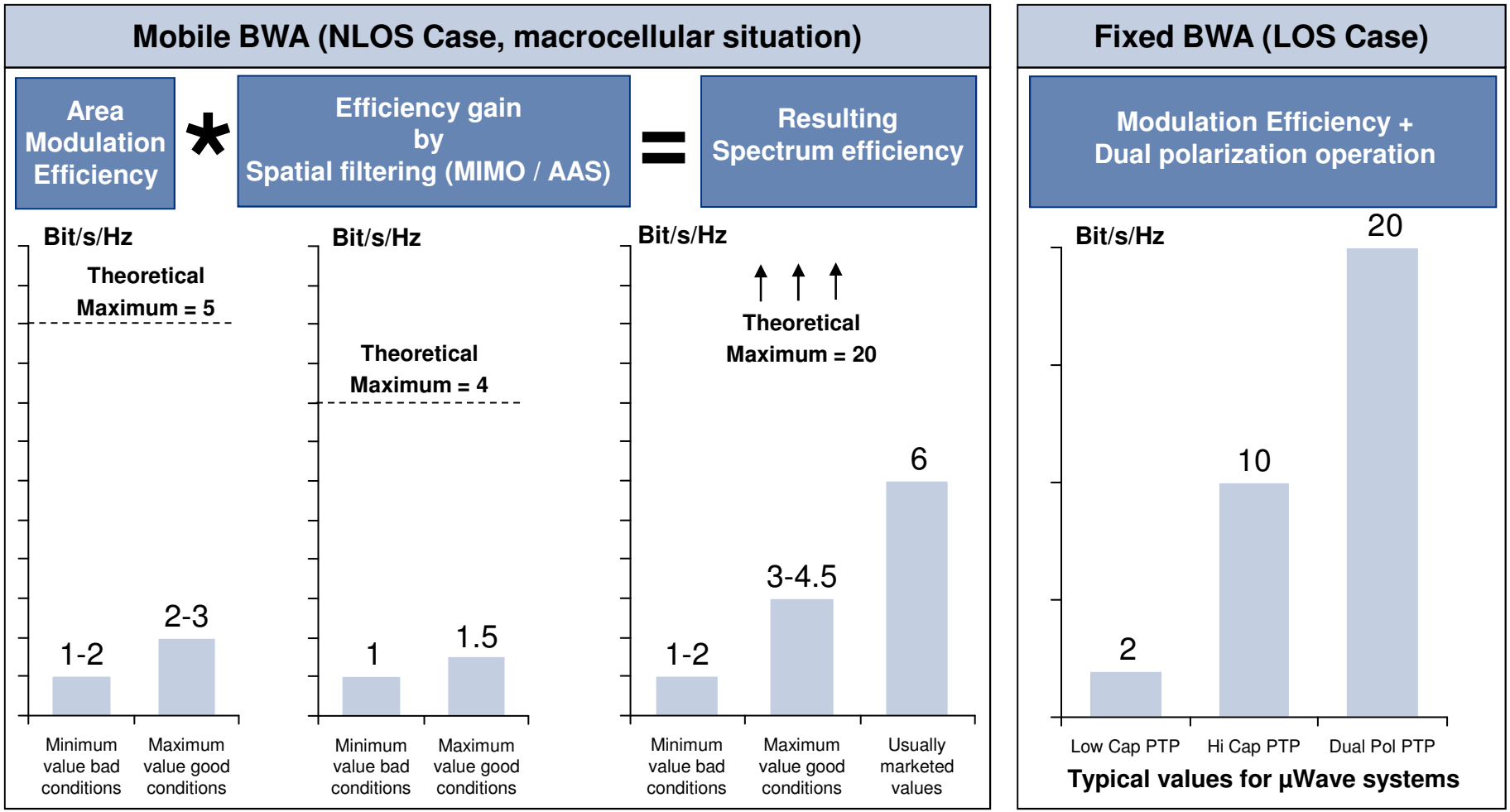
Comments

- LTE is often overhyped regarding implementation and operation costs and technical characteristics
- The advertised **cost/ bit advantage** of LTE does not consider the real life situation where several networks run in parallel
- **Cost reduction for 2G and 3G networks is required for remaining economically feasible**
- Advertised download speed characteristics often reflect ideal test environment values
  - LTE Trials have revealed that real life values are much lower than the advertised ones
  - Parallel active users experience considerably lower data rates

NGN Reality Examples

NGMN air interface performance assessment – a simple model for spectrum efficiency

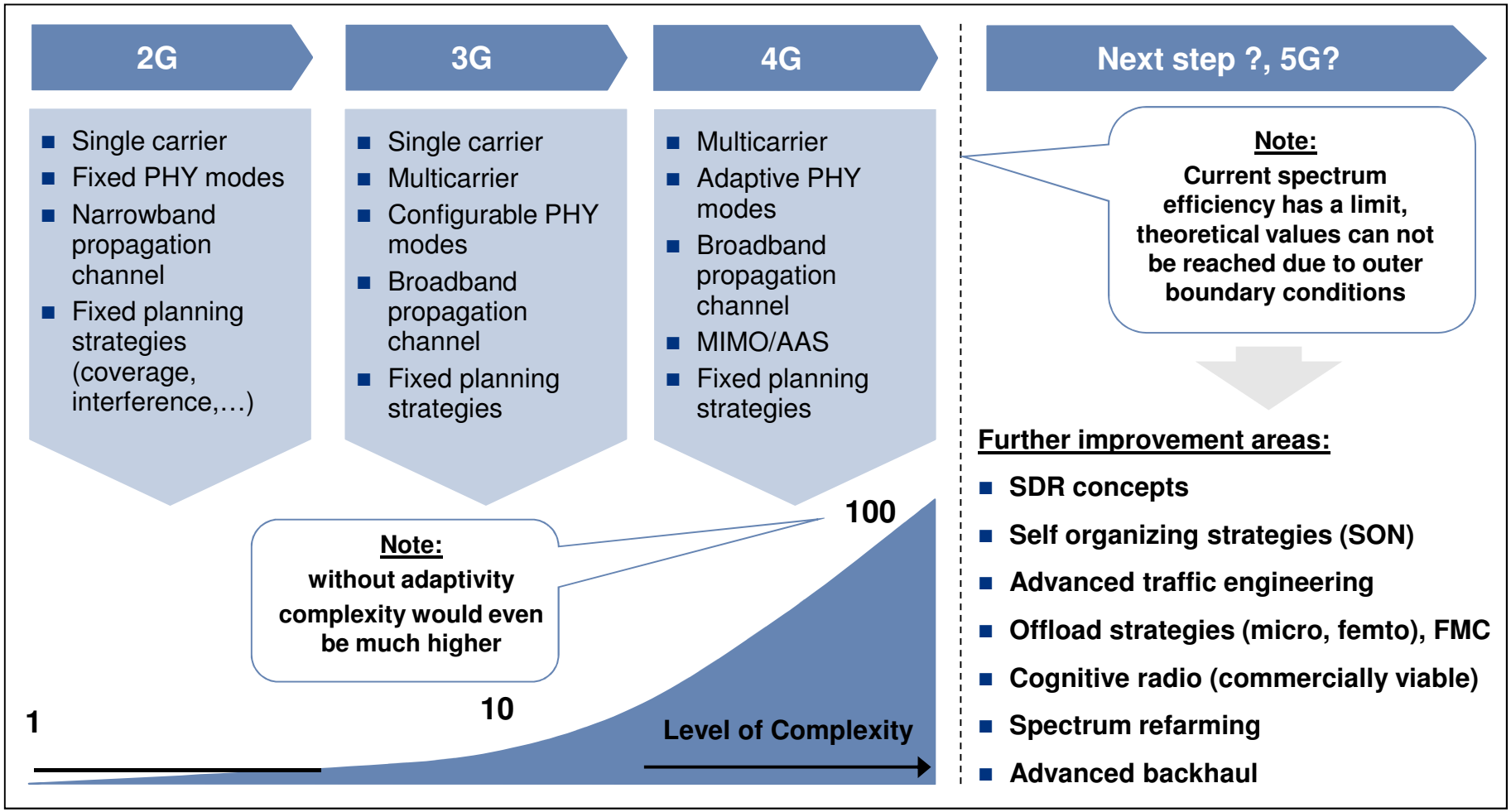
Spectrum efficiency is the better KPI as compared to data rate. High values can only be achieved for LOS and microcellular scenarios, the difference best/worst is big.



NGN Reality Examples

Managing Complexity, example NGMN

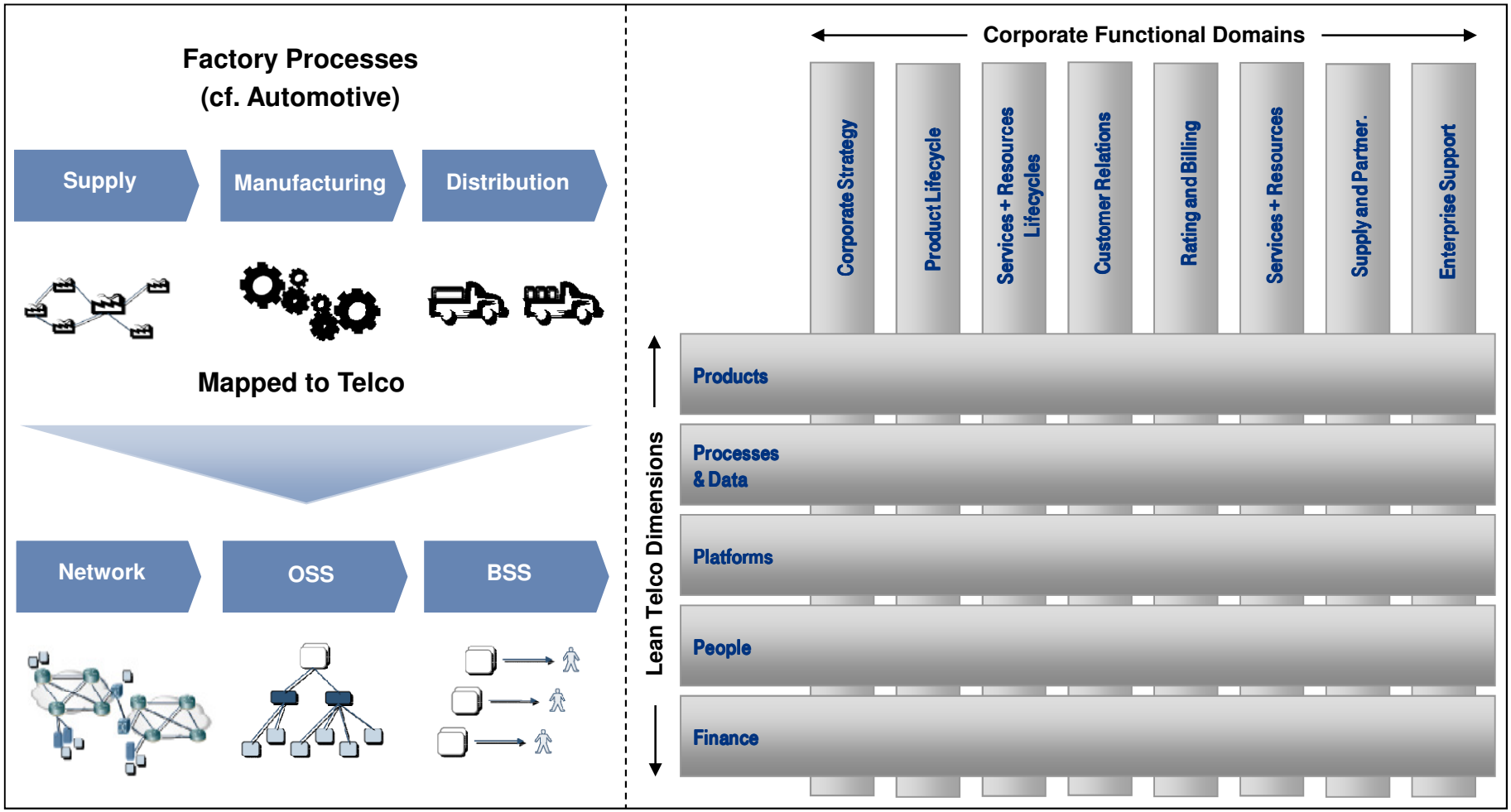
Tweaking performance always increases complexity, currently we are at an asymptotic limit w.r.t. channel efficiency. New approaches on system level are required.



NGN Reality Examples

Lean Network Production (“Lean Telco”)

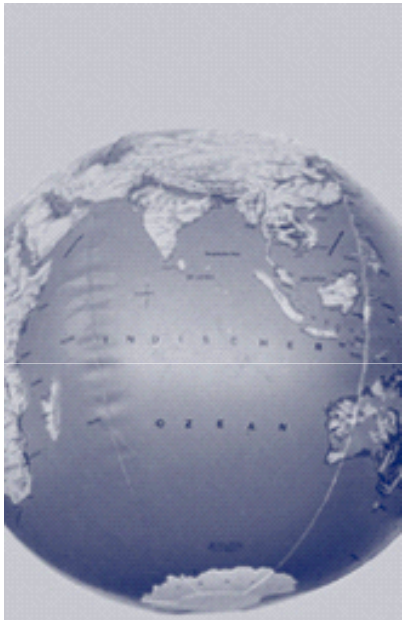
NGN success is not based on technology but on a product agnostic “production” approach that consequently uses economies of scale, modularity and standardization.



Conclusions

1. „Next Generation“ (NG) networks are a major prerequisite for survival in a bandwidth hungry environment with limited ARPU‘s.
2. The NG idea is not only based on technology but requires a holistic approach affecting all corporate functional domains.
3. NG aspects are valid for all technology variants, wireline and wireless solutions need to strongly cooperate (FMI) for a ubiquitous experience.
4. NGMN solutions do not unleash their potential if deployed in a legacy way. Microcellular networks and traffic offloading are key to success.
5. Network performance will continue to be one of the key differentiators for all types of operators.
6. The service and network production process has to be re-engineered completely. The “Lean Telco” approach is a feasible way to success.

Contact



For further information pls. contact

Dr. Hans-Peter Petry
Managing Partner
Member of the Executive Board

Detecon International GmbH
Oberkasseler Str. 2
53227 Bonn (Germany)
Phone +49 228 700 2200
Fax +49 228 700 2107
Mobile +49 170 562 2141
Hans-Peter.Petry@detecon.com

Integrated management & technology consulting worldwide

Backup Slides