ITG-Fachgruppe 5.2.1 „Systemarchitektur und Traffic Engineering“

Service Production Cost A Suitable Metric to Evaluate BWA Technical and Economical Performance

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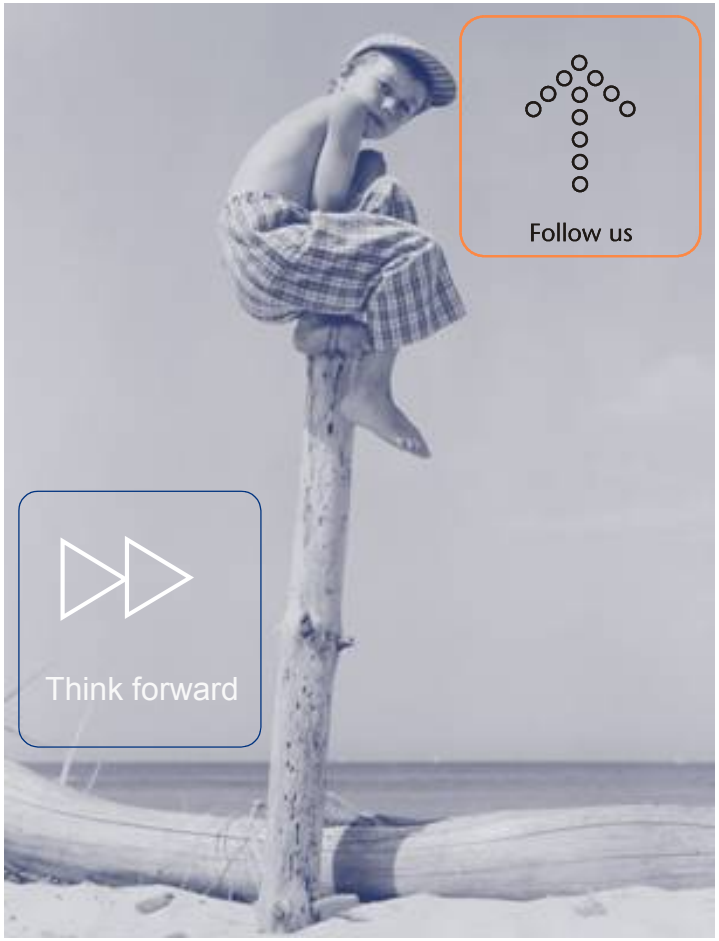

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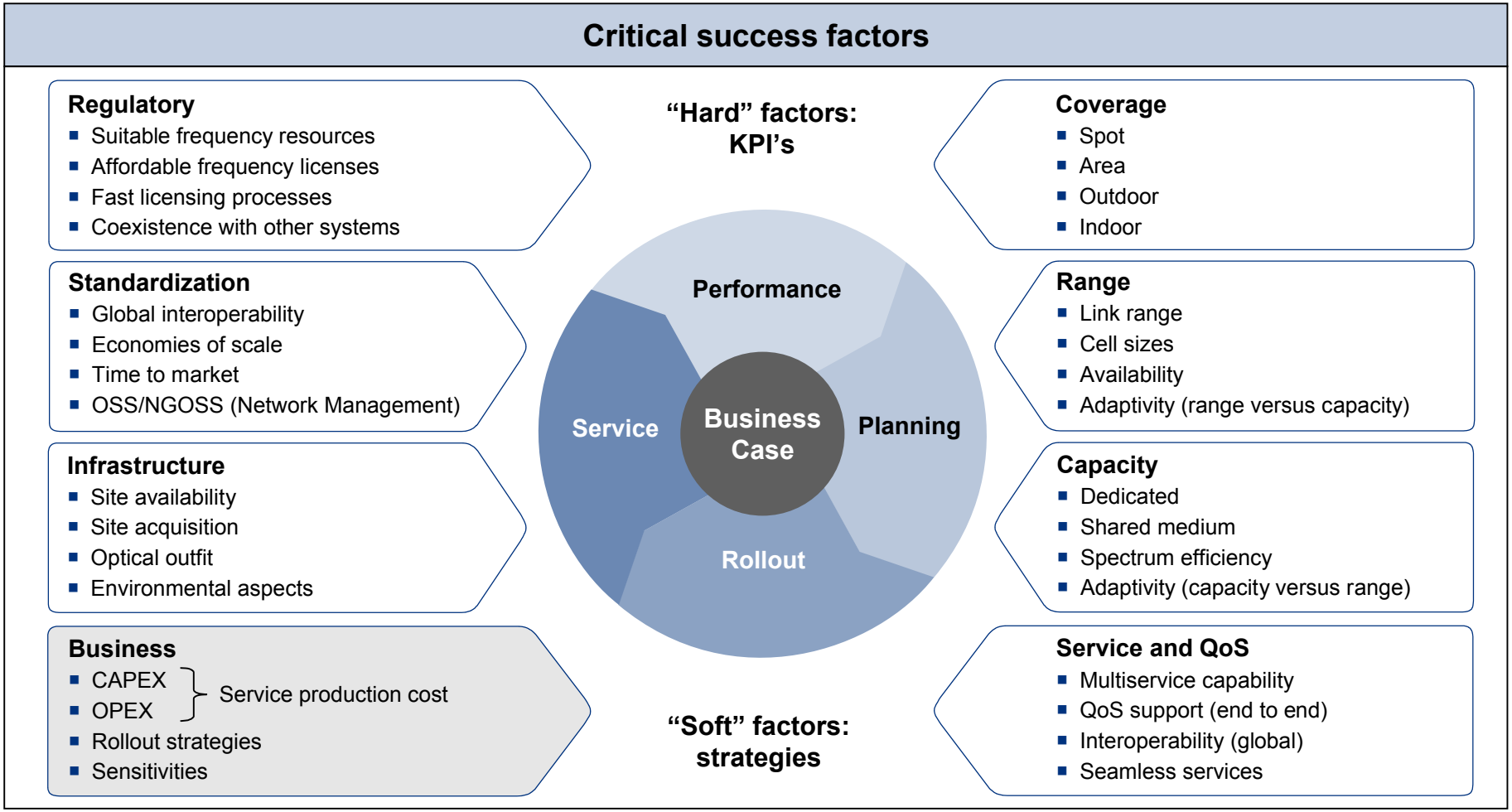
1. Critical Success Factors – Summary

A plethora of requirements

Understanding all success factors of wireless technologies is vital for associated strategies and technology implementation



1. Critical Success Factors - Rationale

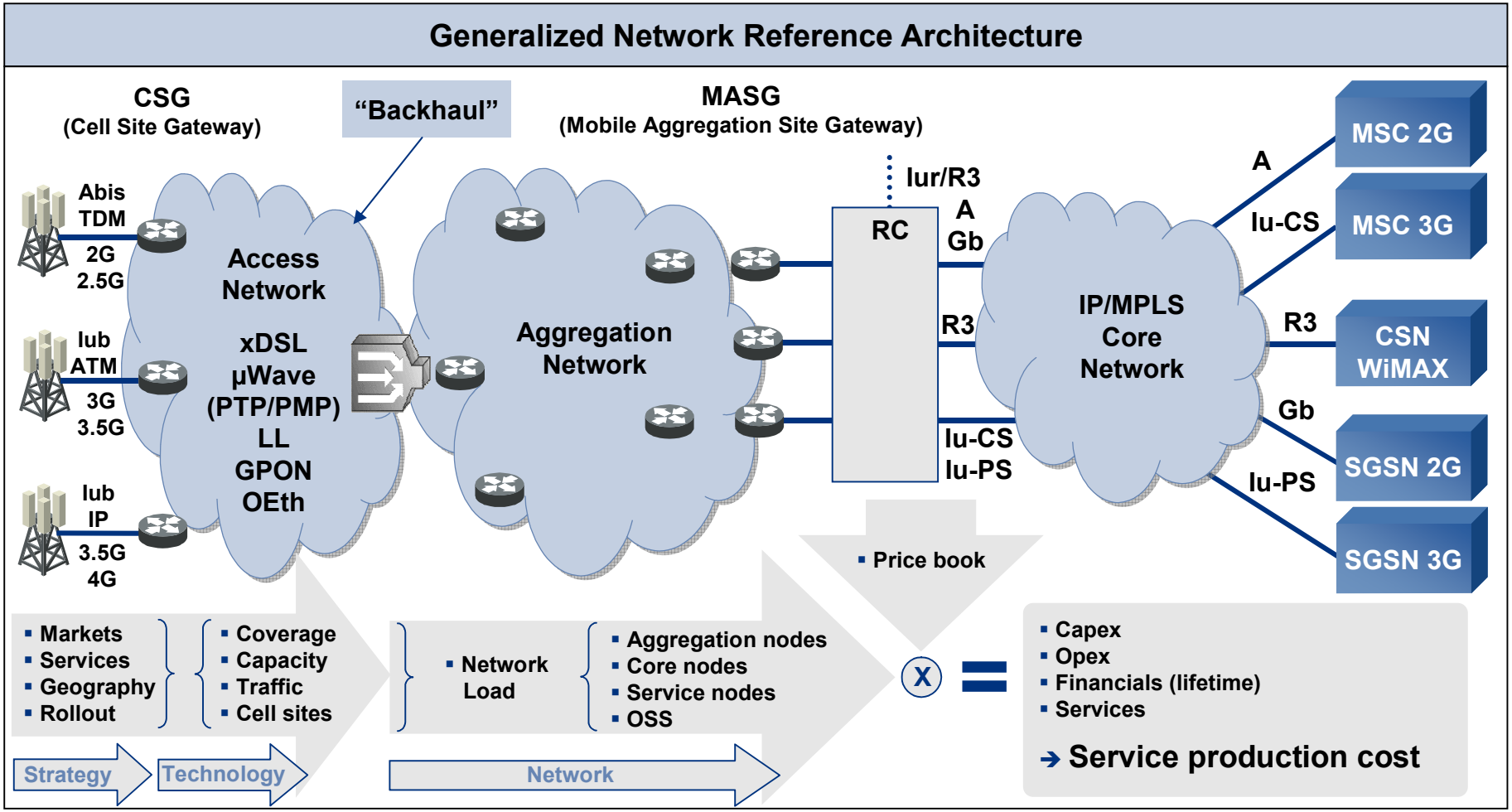
6 Golden Rules for an assessment

1. **Comparing BWA solutions is a complex task. Don't believe simple or simplified statements**
2. **Economical feasibility is strongly coupled with felt user (service) performance, understand all associated technology aspects precisely**
3. **Comparing technologies in general terms always requires a fair assessment based on equal boundary conditions**
4. **Comparing solutions for specific given situations always requires a precise knowledge of the relevant boundary conditions**
5. **Don't rely on comparisons and assessments that only consider specific KPI's, a holistic end to end view is required**
6. **Align associated technology selection and rollout strategies carefully supported by powerful yet pragmatic tools**

2. Service Production Cost - Definition

End to end metric

Service production cost comprises an end to end network view including strategy, technology, dimensioning and market price information

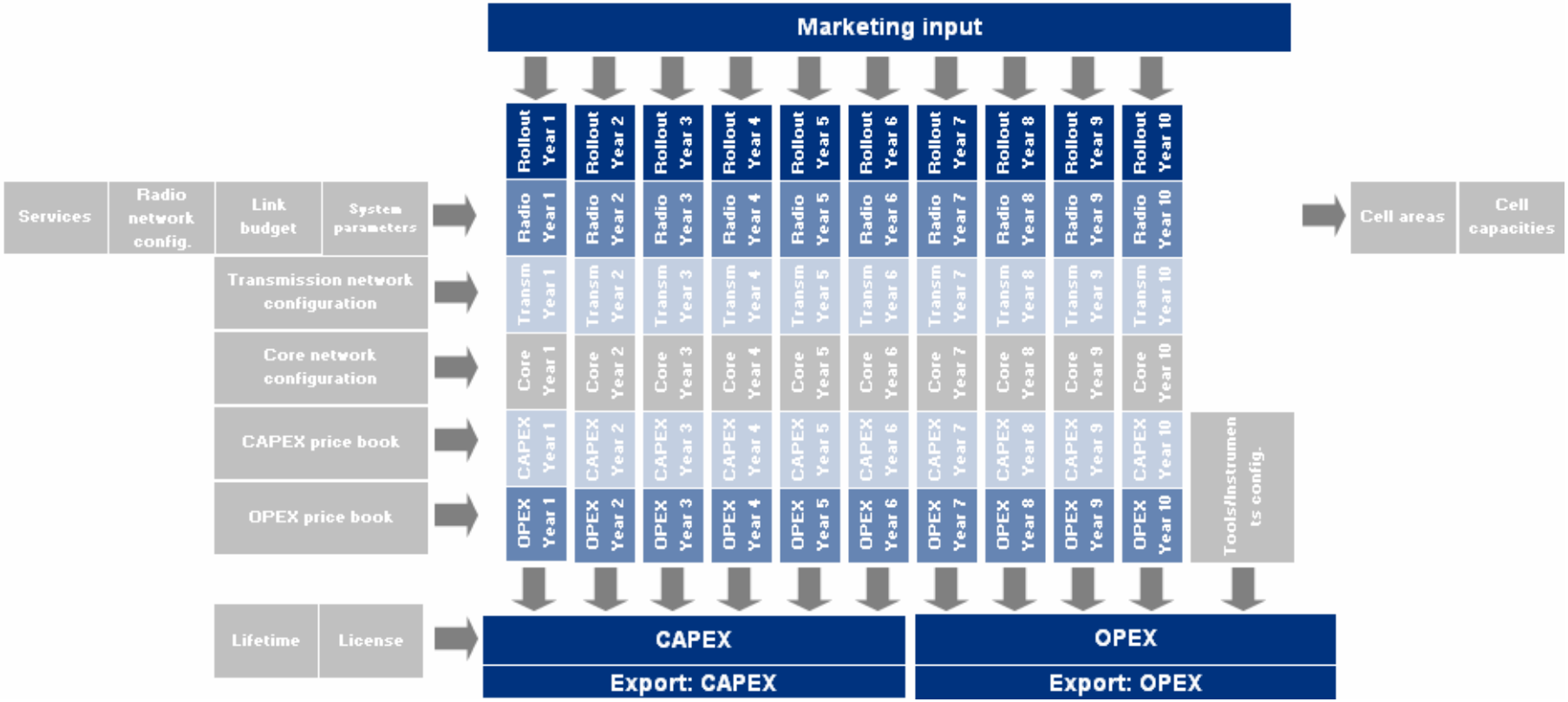


3. Tool Environment

Modular Excel Calculation Sheet with well defined interfaces

The toolset offers a modular and open architecture that can be used partially for specific calculations, generic standard modules are available if information base is small

Screenshot of tool objects

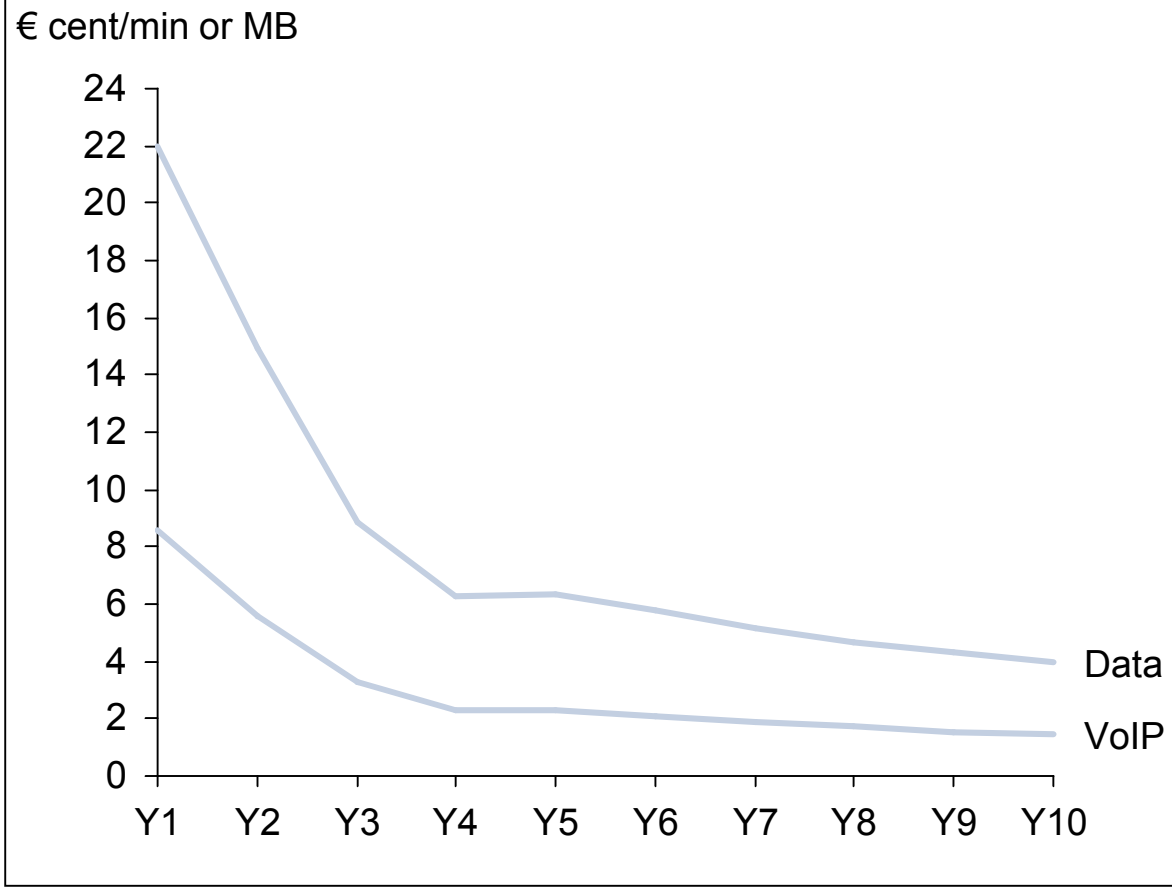


4. Selected Examples

Example 1: IEEE (Mobile WiMAX)

Coverage driven deployment of IEEE 802.16 e (greenfield) @ 2.5 GHz

Service production costs



Remarks

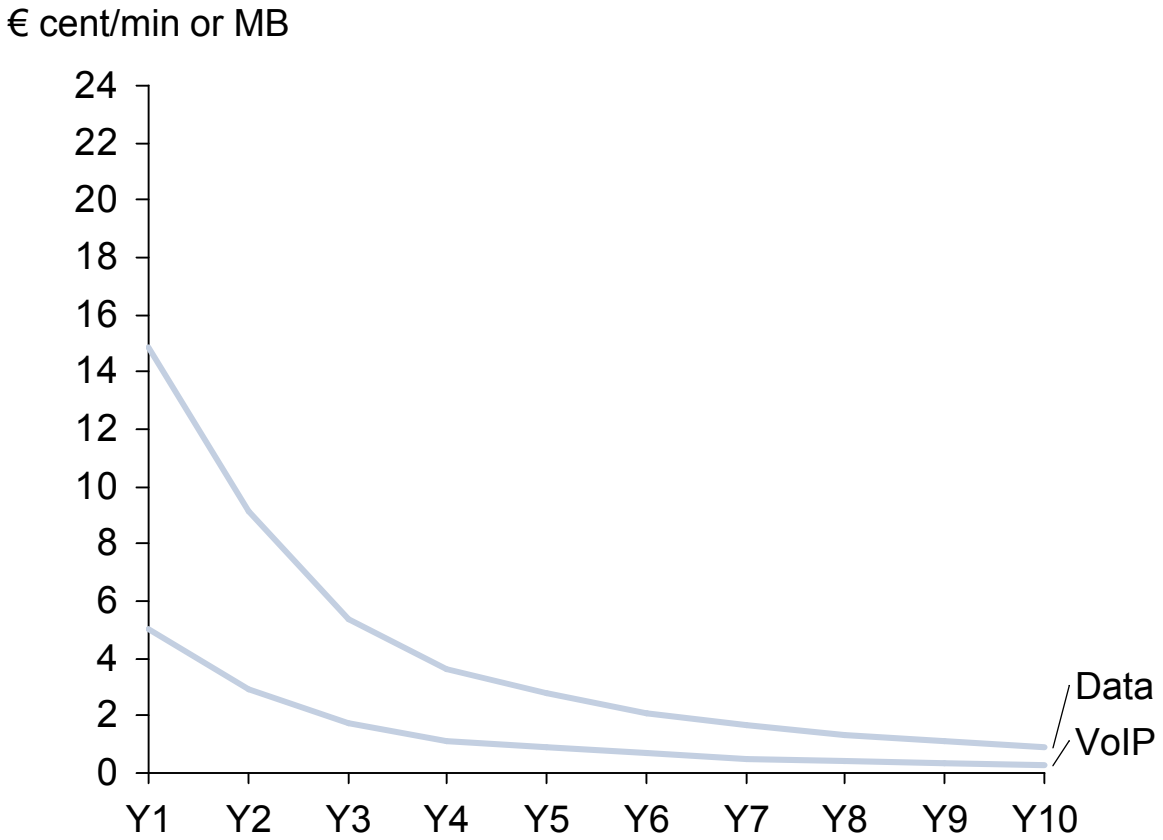
- **Coverage target:**
  - 100% population coverage target
  - Area: 352125 km^2
  - Population distribution: 1.8% dense urban, 13.5% urban, 28.6% suburban, 56.1% rural
  - 14.51 Mill. Subscribers in year 10, 100 min/ month/ subscriber VoIP, 400 MB/ month/ subscriber data
  - 802.16e, 2.5GHz, 5 MHz, subchannelization
- **Costs included:**
  - Civil works
  - RBS
  - Tools and instruments
  - PM & Training
  - O&M
  - Access transmission and Core

4. Selected Examples

Example 2: 3GPP (HSPA)

Coverage driven deployment of HSPA (greenfield) @ 2.1 GHz

Service production costs



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  - 14.51 Mill. Subscribers in year 10, 100 min/ month/ subscriber VoIP, 400 MB/ month/ subscriber data
  - HSDPA, 2110 MHz, 5 MHz, UE CAT. 10 (DL) and CAT 6 (UL)
- **Costs included:**
  - Civil works
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  - Tools and instruments
  - PM & Training
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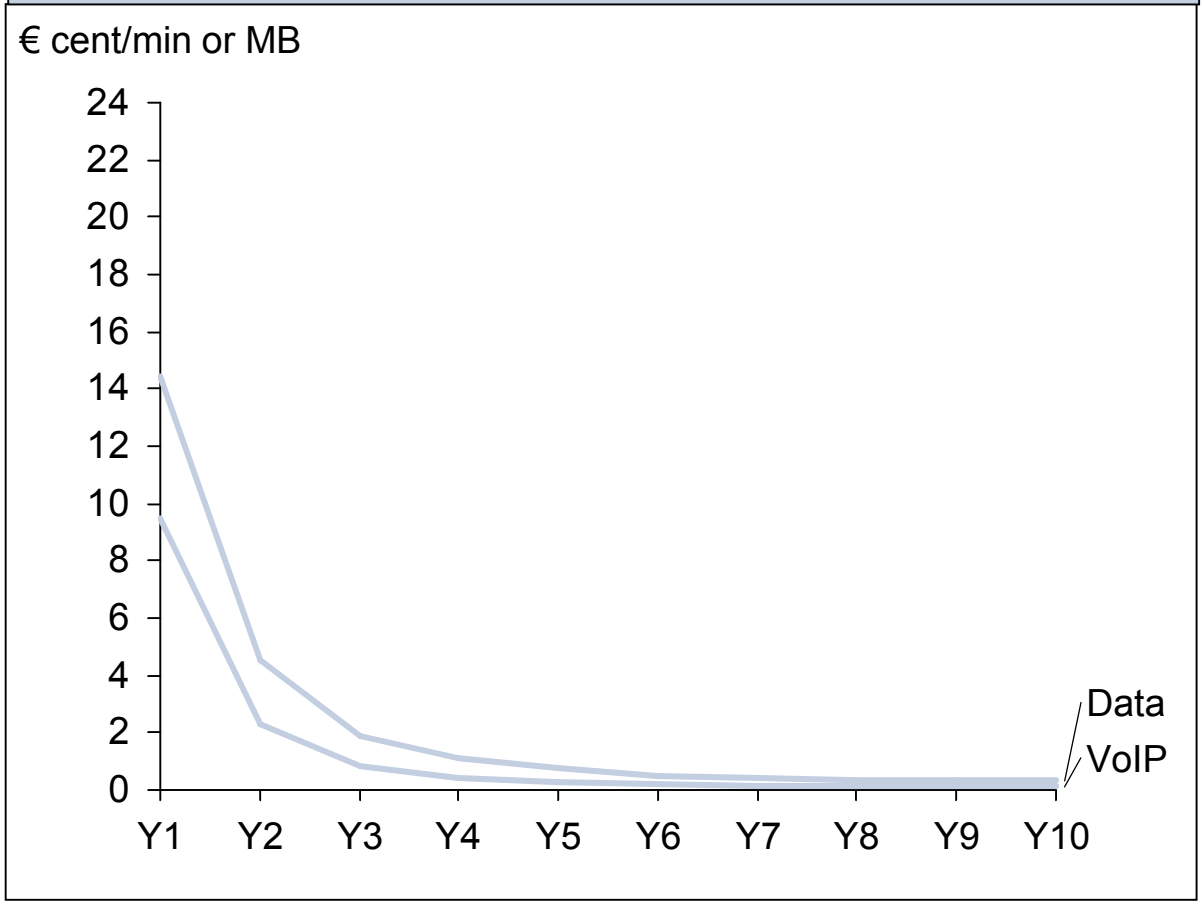
  - Access transmission and Core

4. Selected Examples

Example 3: IEEE (Mobile WiMAX)

Demand driven rollout of IEEE 802.16e. Production cost are substantially reduced due to better network utilization

Service production costs



Remarks

- **Coverage target:**
  - 100% population coverage target
  - Area: 405 km^2
  - Population distribution: 1% dense urban, 5% urban, 90% suburban, 4% rural
  - 170000 subscribers in year 10, 150 min/ month/ subscriber VoIP, 2500 MB/ month/ subscriber data
  - 802.16e, 2.5GHz, 5 MHz, subchannelization
- **Costs included:**
  - Civil works
  - RBS
  - Tools and instruments
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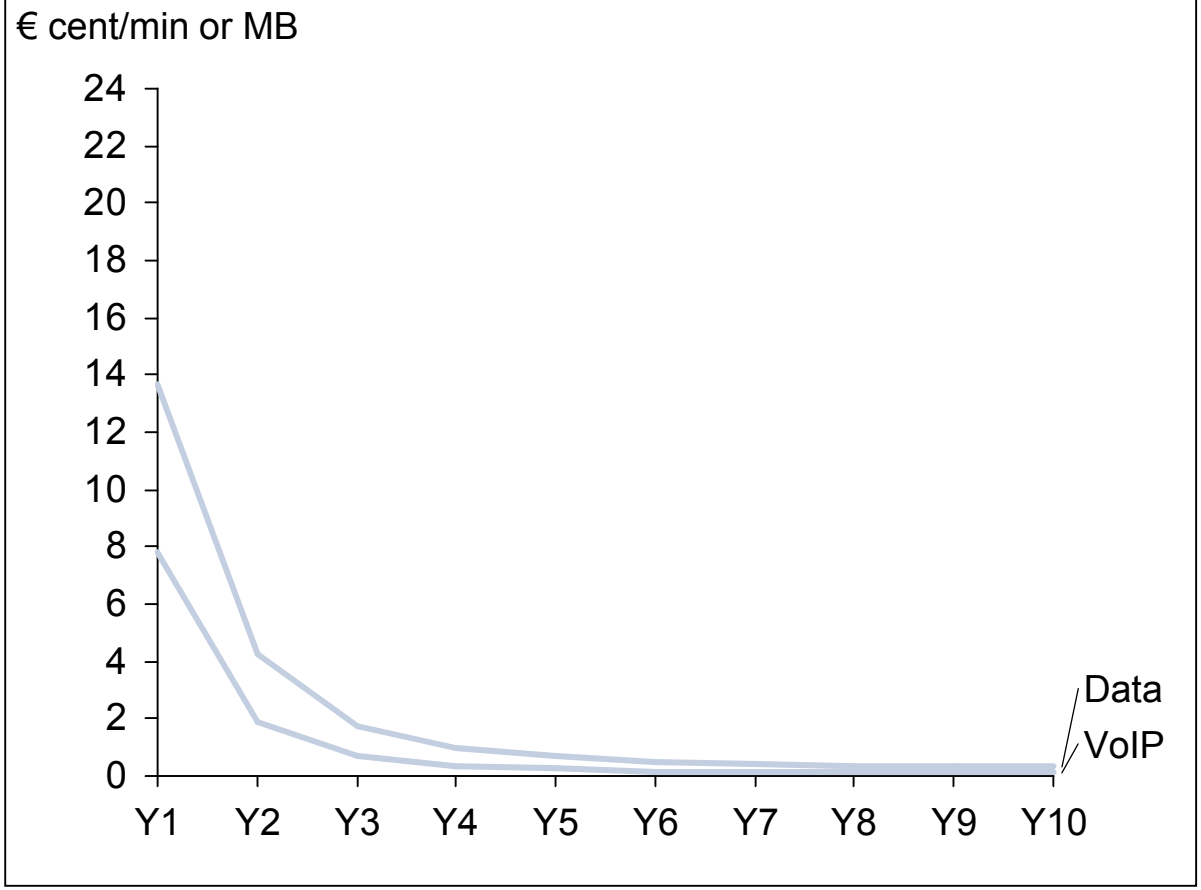
4. Selected Examples

Example 4: 3GPP (HSPA)

<u>Demand</u> driven rollout of HSPA. Differences in production cost as a function of technology are vanishing

Service production costs



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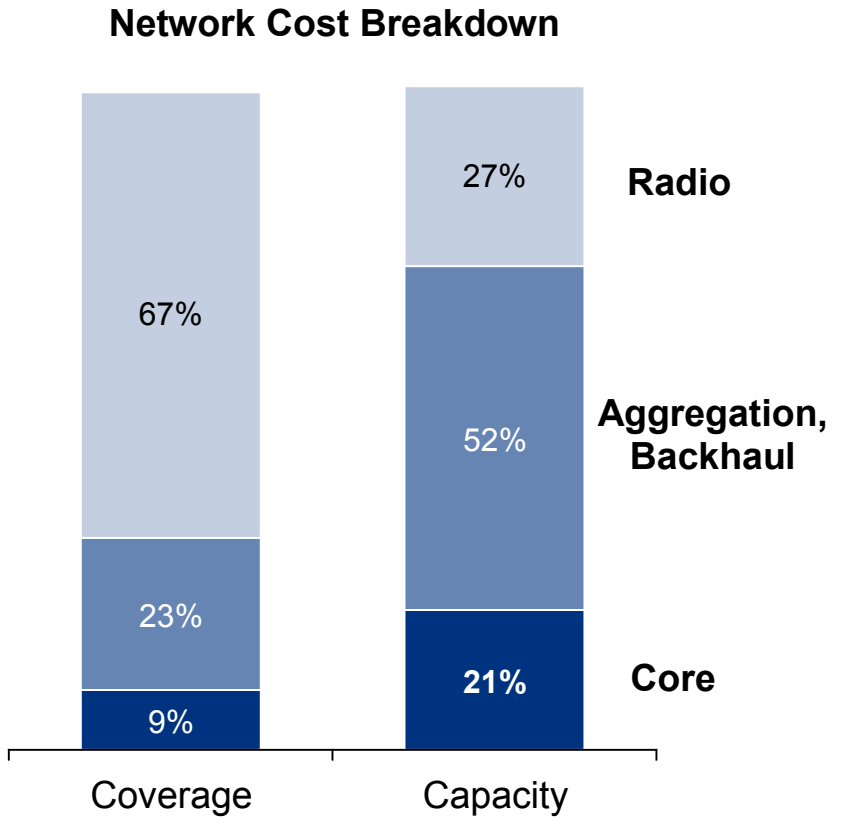
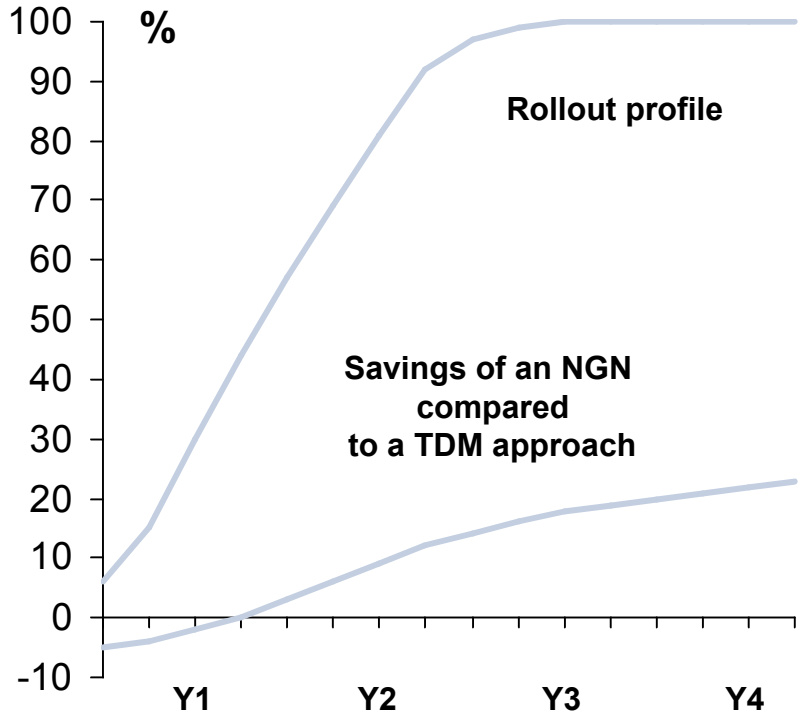
4. Selected Examples

Example 5: NGMN backhaul

For a capacity driven rollout of NGMN the backhaul becomes the dominant cost factor, special optimization strategies are required

Rationale for a Technology Change

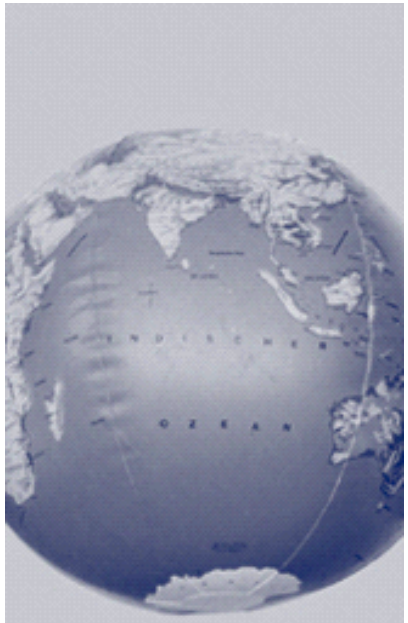




5. Conclusions

1. Technical parameters alone (in particular individual KPI's) are not suited to compare technologies and strategies
2. The user acceptance depends on felt performance, this depends on a set of parameters that have to be considered simultaneously
3. The operator success does not only depend on technology but on adapted market and rollout strategies together with service quality
4. The analysis of a greenfield situation is considerably different from a scenario where migration of an installed base is necessary
5. Assessment of innovative technologies has to be performed on a fair basis and equal or at least comparable boundary conditions
6. Service production cost has proven to be a suitable metric for technology and strategy evaluation in that context

6. Contact



Thank you very much for your kind attention

For further information pls. contact

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