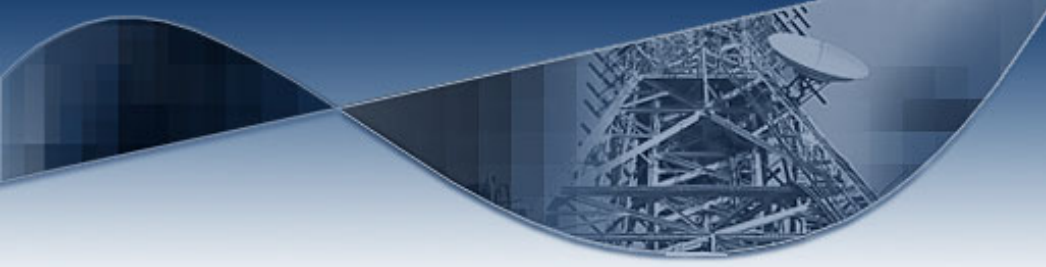




Broadcasters' requirements in the light of 5G and beyond

Jochen Mezger

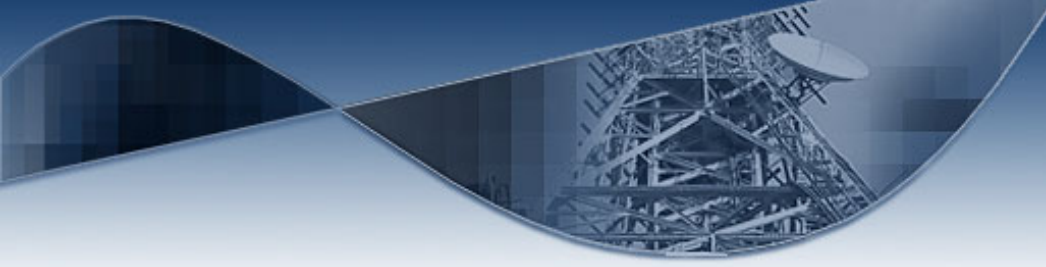
IRT, Germany



Nobody needs ARD, ZDF, RTL etc.

Netflix founder Reed Hastings

Frankfurter Allgemeine Zeitung, 10 May 2015



back then...



Linear TV

shared



fixed



Linear Radio

...well...mainly fixed



It's a Sony - 1963

Could receive impressive two TV programmes

...and today

linear radio & TV
time-shifted
on-demand
second screen
multi-view
interactive
social media
data
hybrid

Content/service diversity



New market models /
global competition



Multiple distribution platforms



**large screen
TV sets**



**portable
TV sets**



smartphones



**kitchen
radio / TV**



car radio



**HiFi stereo
systems**



PCs & Laptops



tablets

Growing device capabilities



Higher user expectations
(e.g. quality, availability)



Increasing demand for
network resources

User behaviour

Changing user behaviour

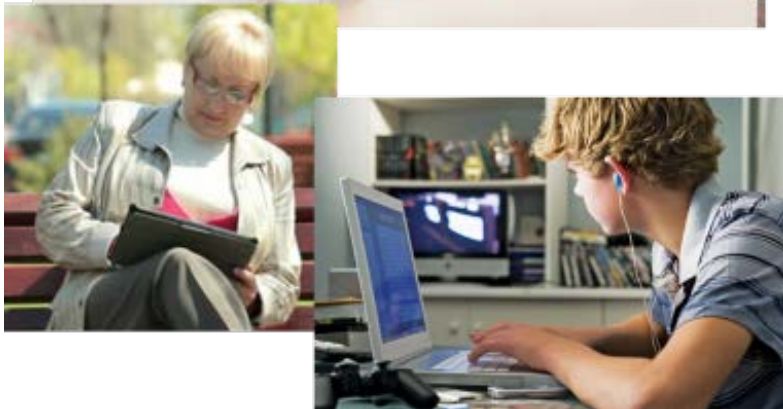


Linear viewing dominant
on-demand growing

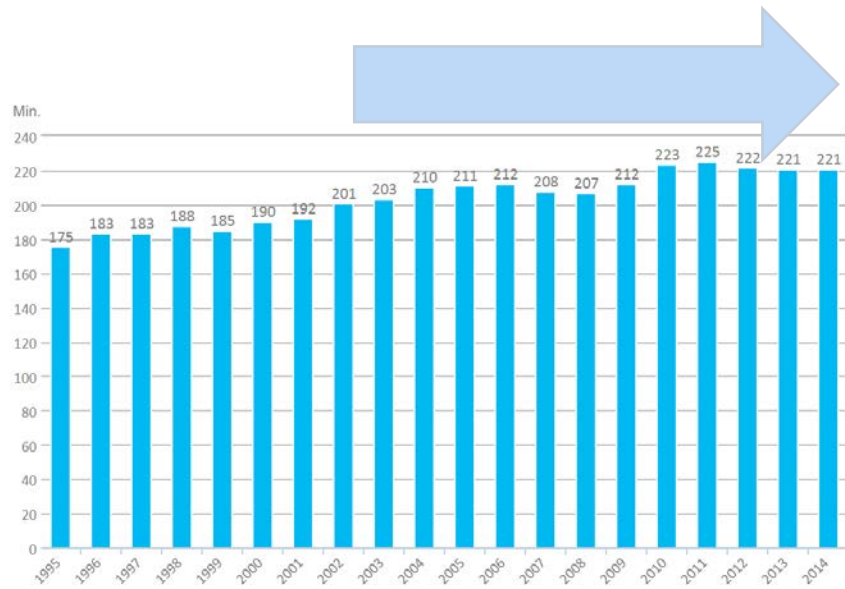
Most media consumption at home



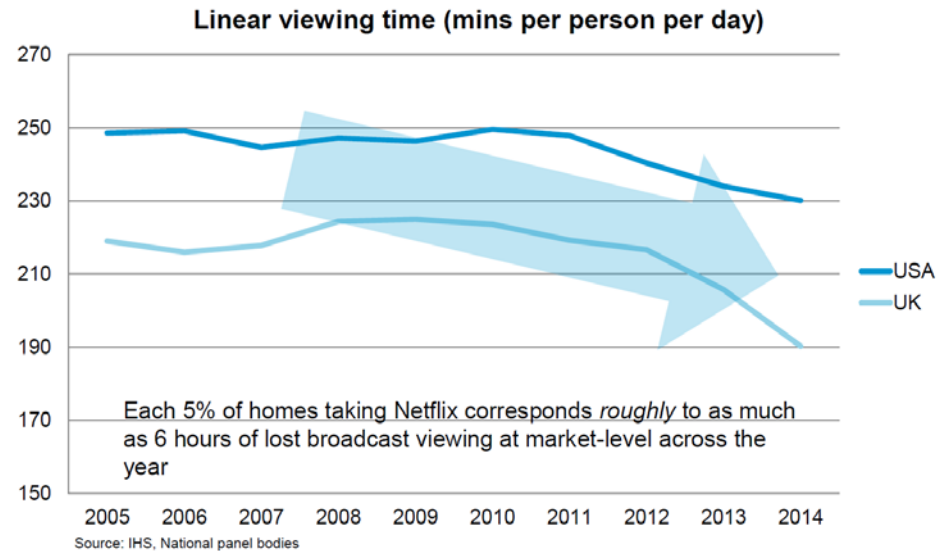
Future on-demand share?



User behaviour is changing !?



Source: <https://www.agf.de/daten/tvdaten/sehdauer/>



Linear viewing time is stable in certain markets (e.g. Germany)

..... but it is decreasing in others (like USA, UK)

USA non-linear viewing time:

50% on-demand / 50% DVR time-shifted



- at home / at work
- on the move

Users want it all ...

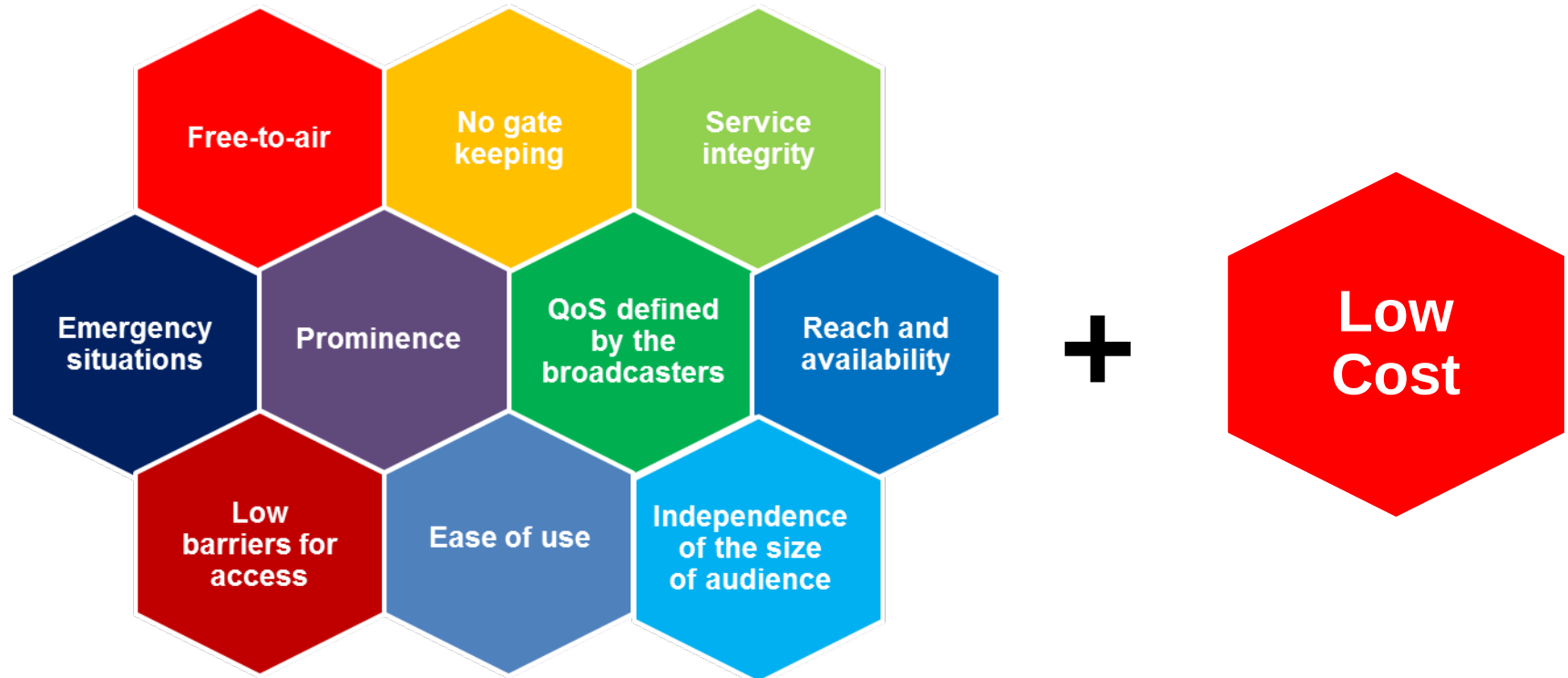


- technology agnostic
- affordable
- easy to use



- in company (shared experience)
- in private (personal experience)
- being connected

Broadcasters' requirements in distribution



Mobile use cases of increasing importance not yet served satisfactorily

Use cases	Problems
Linear TV Tablets, smartphones Transient	Technical deficiencies: • No DVB-T/T2 receiver built in • No broadband multicast mode • Network capacities too small for large scale video distribution • Lack of integration of linear and nonlinear content Consequences: • Quality not sufficient for a large audience • Expensive for users
On demand TV Tablets, smartphones Transient	
Hybrid TV TV in a vehicle	

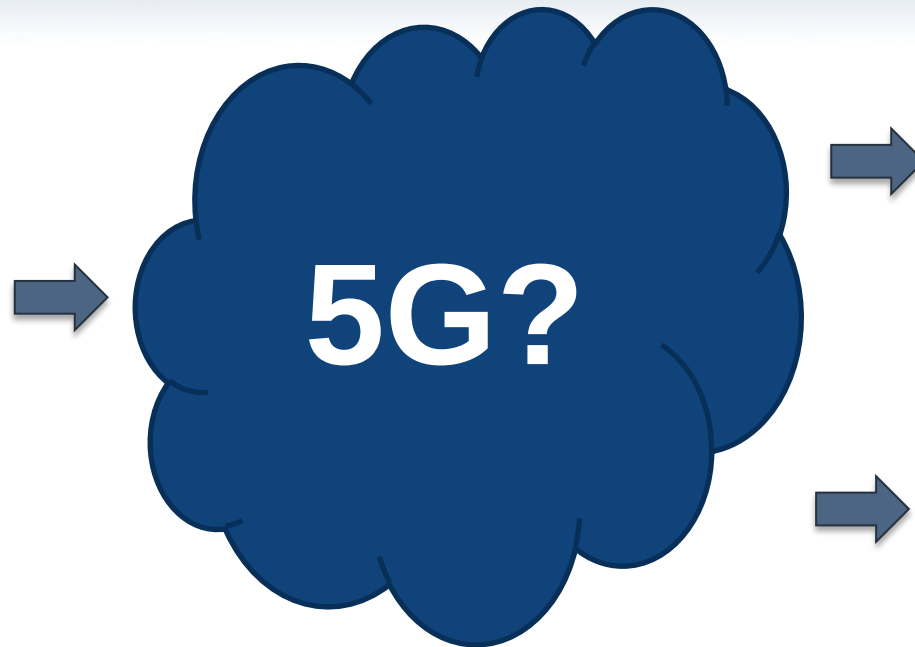
Broadcasters are interested in new distribution technologies if they can help to overcome these problems.

5G a solution?

Users

Broadcasters

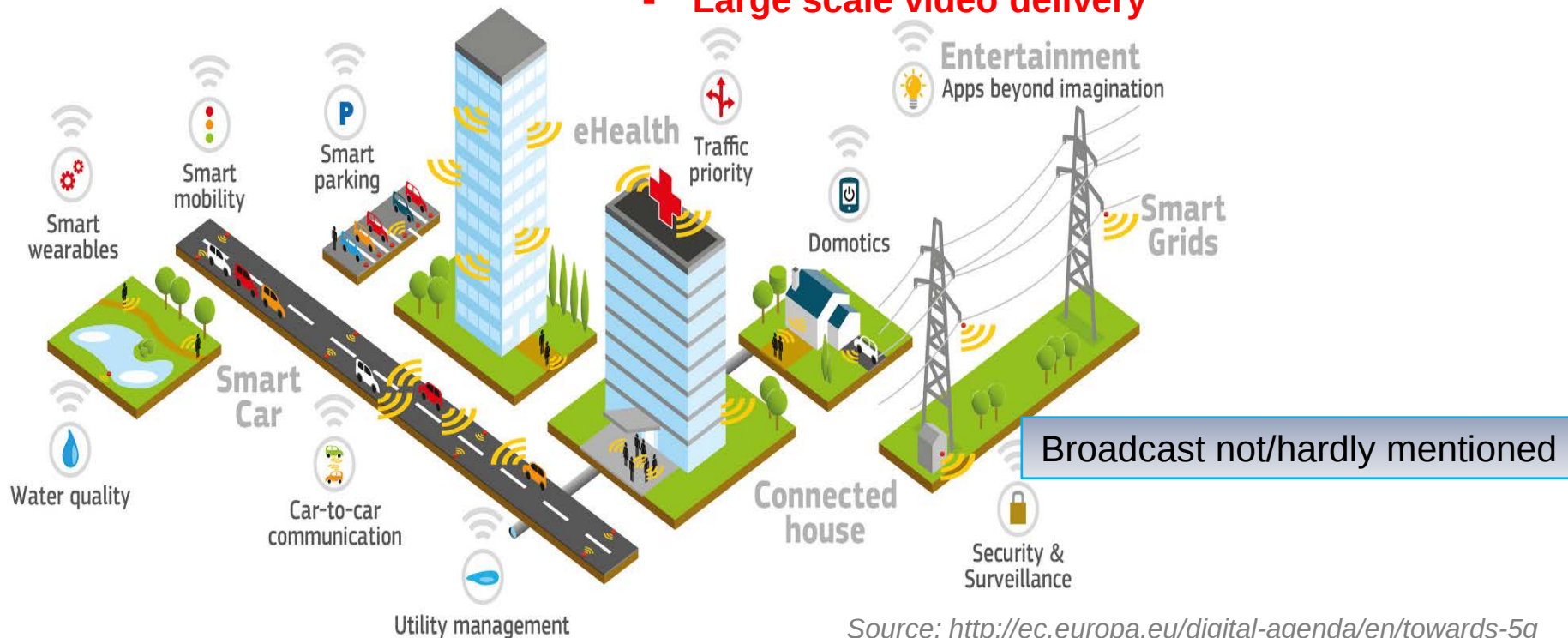
linear radio & TV
time-shifted
on-demand
second screen
multi-view
hybrid
interactive
social media
data



5G could enable not adequately served use cases

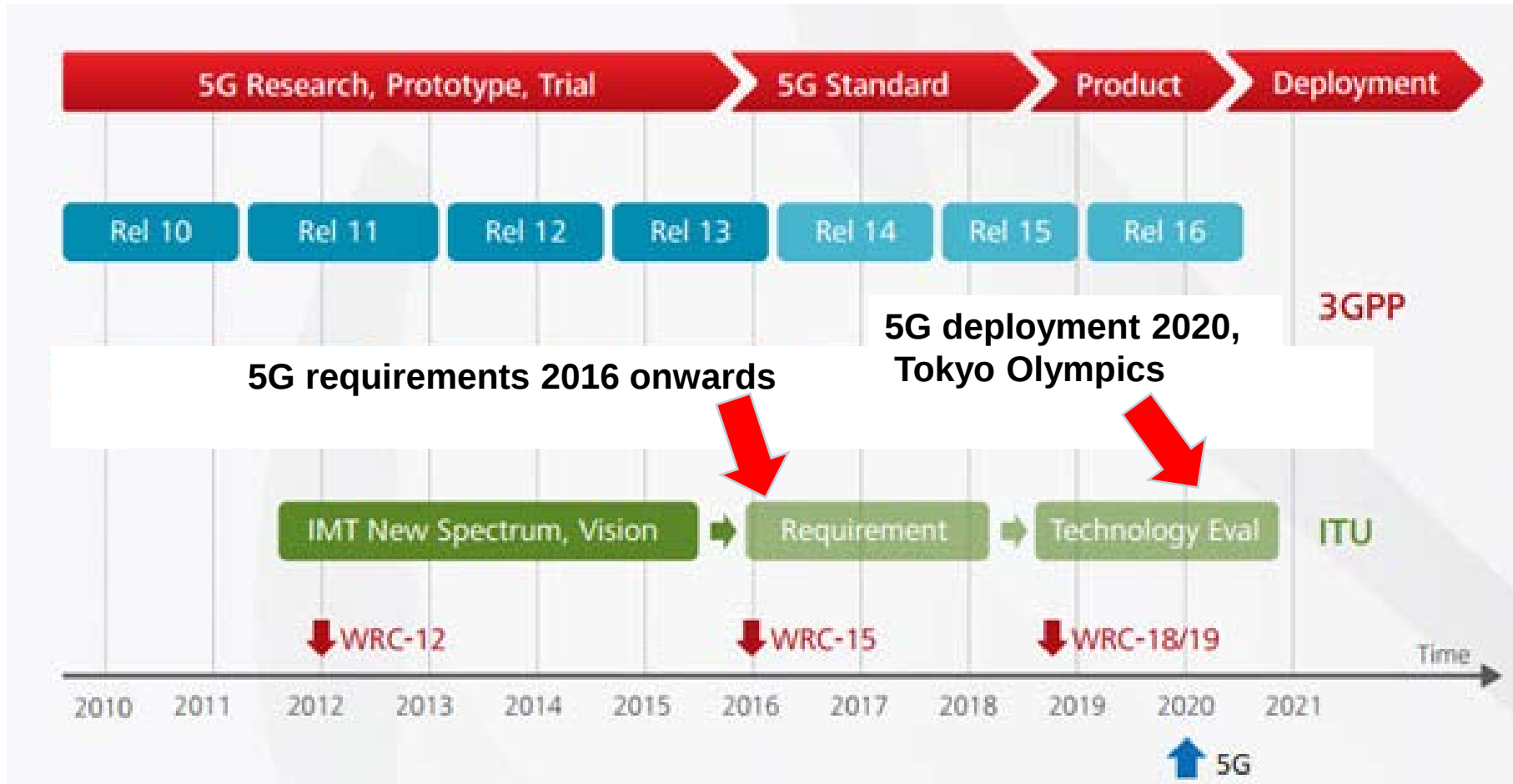
What 5G is about

- Very high throughput tens of Gbps
- Very low latency (~1 ms)
- Very high availability (99,99% of time)
- Very high density of connected devices (mill/sqkm)
- 10x more energy efficient than LTE
- 10x more cost efficient
- **Large scale video delivery**

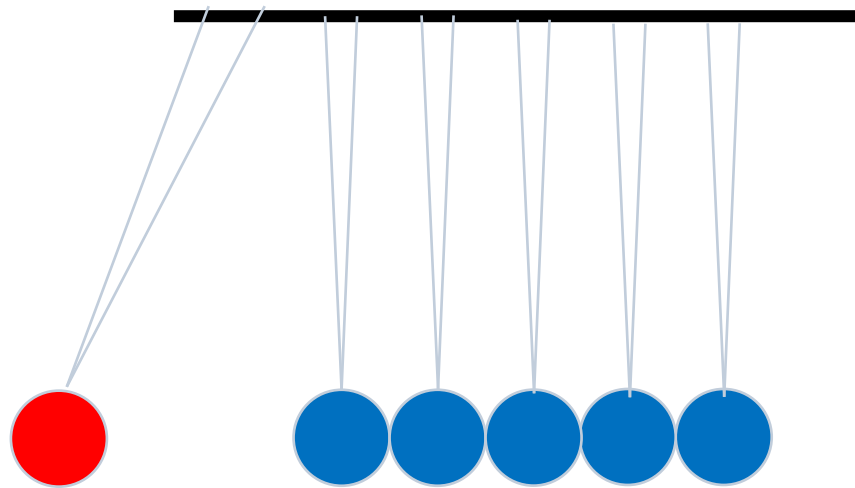


Source: <http://ec.europa.eu/digital-agenda/en/towards-5g>

5G Roadmap



5G – a lot of global momentum and support



Policy makers

Standardisation bodies

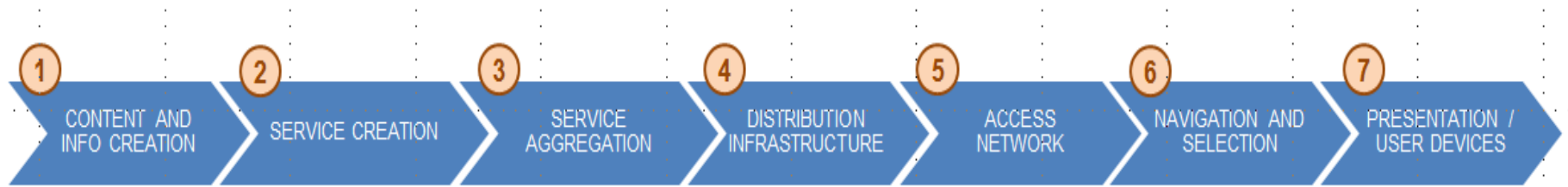
5G Research initiatives

Industry

Window of opportunity for broadcasters



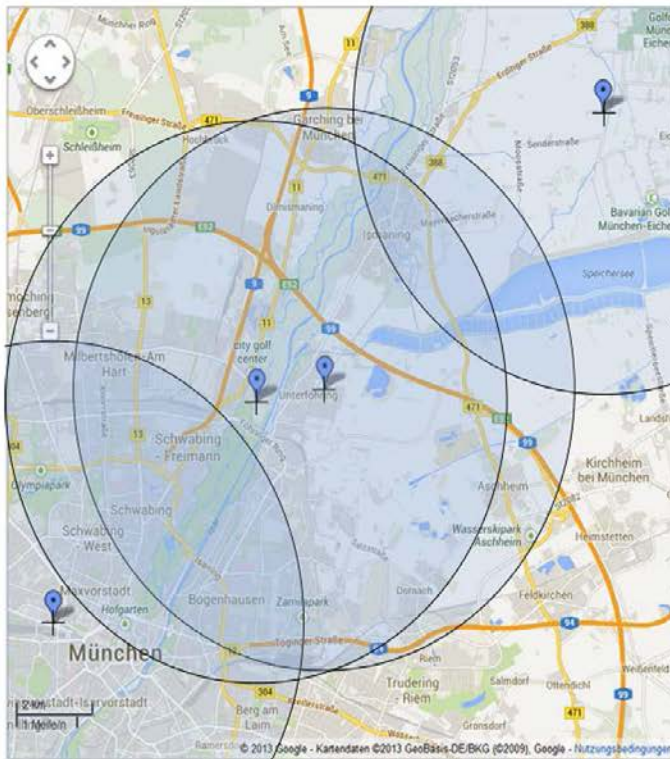
5G – Concerns



- **Market models in the value chain?**
- **Regulatory conditions?**
- **Loss of spectrum for broadcasters?**
- **Prevalence of wireless networks at the expense of other platforms?**
- **Dominated by telcos?**
- **Increased competition?**
- **Economic viability (High Power High Tower vs Low Power Low Tower) ?**

broadcaster friendly design indispensable

IMB5 –project on eMBMS Munich/Bavaria



- 4 Sites in Munich area supporting eMBMS and are used to form an SFN
- LTE FDD, 15 kHz Sub-Carrier spacing, CP=16,67 μ s (today's situation)
- 10 MHz Channel in UHF Spectrum (3GPP Band 28/APT700)
- Usage of 60% LTE Resources for eMBMS/SFN
- Terminals: Qualcomm Developer Handsets (FFA)

Consortium



Associated Partners:



BMW Group
Forschung und Technik



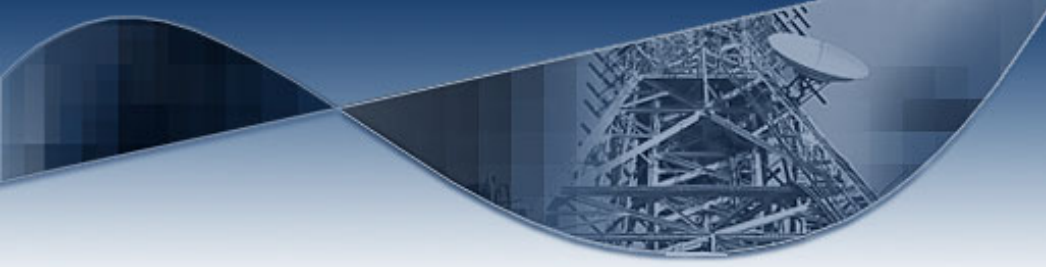
5G – required actions – broadcasters view

Pre-standardisation

- fruitful cooperation possible?
- New market models beyond telco-models (PSB friendly)
- No struggle between ATSC3.0 / „DVB-NGT“ / LTE eMBMS
- No hasty spectrum decision
- Policy support
- Clarify economic viability

Standardisation

- Broadcasters' requirements
- Only one-time distribution
- Flexible use of HPHT/LPLT
- transfer eMBMS towards 5G
- Broadcasters to contribute



Greetings to Mr. Netflix

Broadcasters will be needed for quite a long time



Thank you for your attention

Jochen Mezger +
contributions made by A. Schertz, Dr. R. Beutler

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