

ITU Workshop on the Future of Television for Europe

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Using 5G Campus networks for television production

Dr. Khishigbayar Dushchuluun, ARD-CCFM



5G for TV production

Broadcasters are expecting from 5G

Improve
technical &
operational
efficiency

increase
flexibility,
easy-to-
implement

Reduce
production
cost

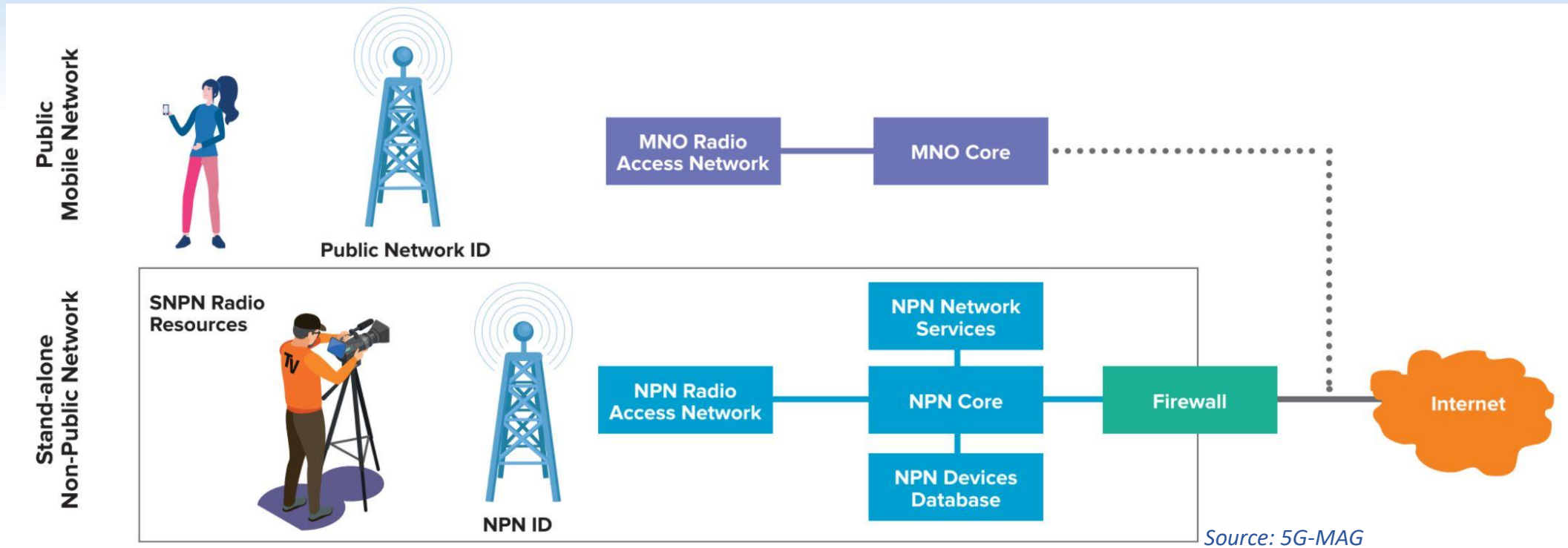
Guaranteed
performance
characteristics
QoS

enable new
production
workflows

flexible TV
production in
best quality,
max. security

To realize these capabilities, specific technical and other content production requirements must be identified to be met in 5G

5G Campus network



- exclusive wireless network (restricted user group)
- independence from public network providers
- guaranteed performance characteristics (data rate, bandwidth, latency)
- able to carry out a use case with a complete TV production chain

5G Campus network – Spectrum fees in Germany

for **3.7 - 3.8 GHz**

$$\text{Licence Fee (in Euro)} = 1000 + B * t * 5 * (6a1 + a2).$$

Example for industry:

100 MHz, 10 years, 1 square kilometer

→ **4,000 Euro**

for **24.25 - 27.5 GHz**

$$\text{Licence Fee (in Euro)} = 1000 + B * t * 0.63 * (6a1 + a2).$$

Example for industry:

400 MHz, 10 years, 3 square kilometer

→ **46,360 Euro**

1,000 is a base amount

B: Bandwidth in MHz (from 10 MHz to 100 MHz)

t: Duration of the allocation in years (e.g., 10 years).

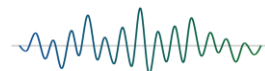
a: Surface Area in square kilometer

a1: Land for settlements and transport infrastructure

a2: other types of Land

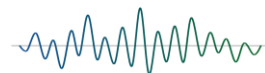
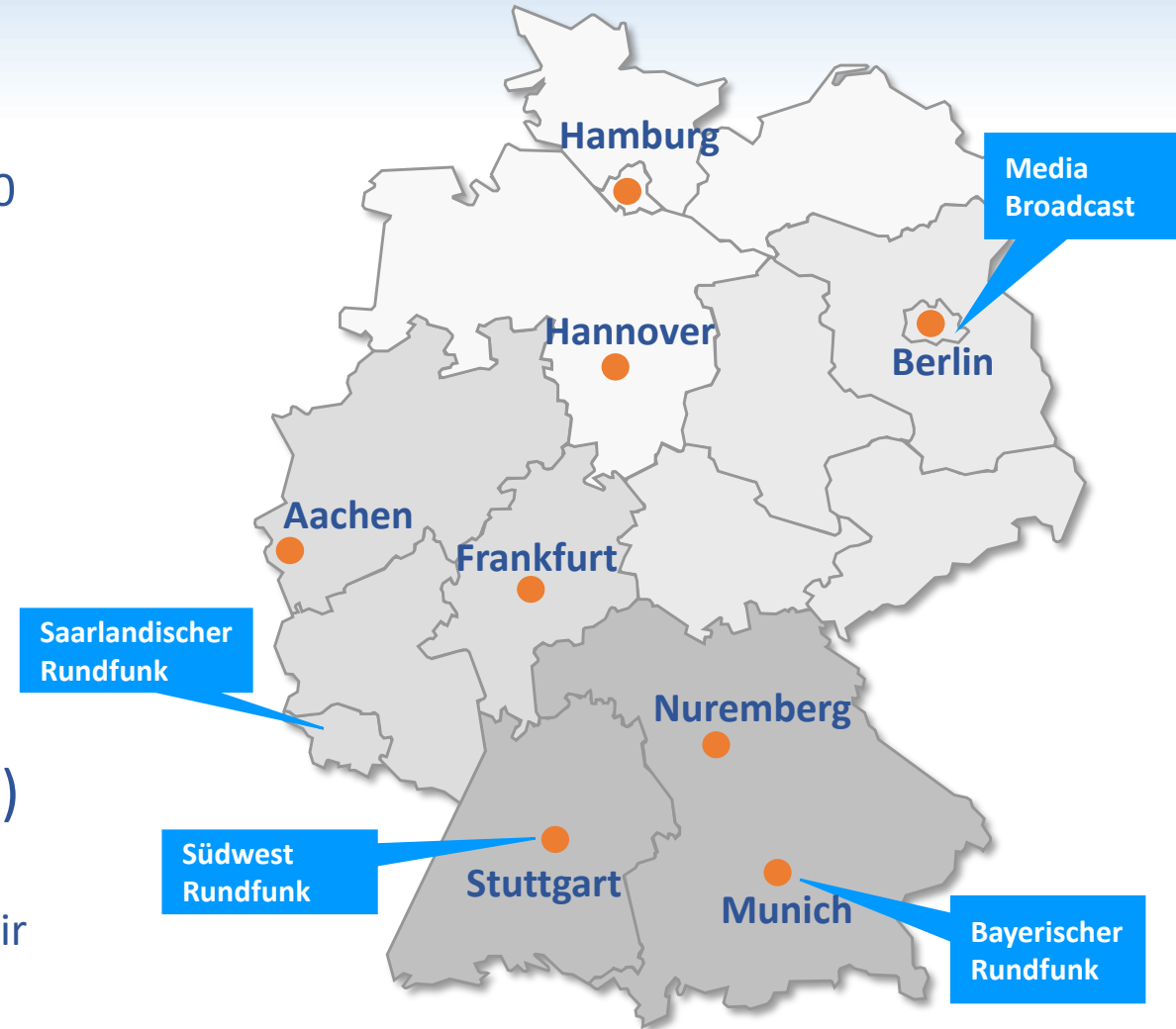


Bundesnetzagentur



5G Campus network – Spectrum in Germany

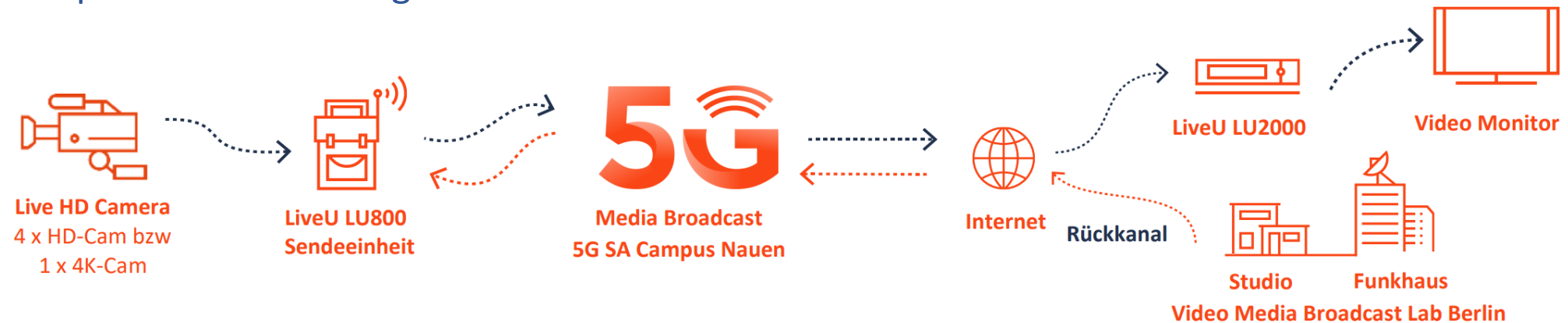
- **3.7 - 3.8 GHz** to verticals (12/2019)
 - total bandwidth of 100 MHz
 - can be applied for with an increment of 10 MHz block size each for a maximum term of 10 years.
- **24.25 - 27.5 GHz** (01/2021)
 - total bandwidth of 3250 MHz
 - the requested bandwidths will be less or equal to 800 MHz based on the currently available device parameters
- So far **158** licences awarded throughout Germany (as of Oct 2021)
 - primarily in the south and western regions
 - among them 4 German broadcasters for their TV production



5G Campus network

LiveU transmits for the first time in the 5G Standalone (SA) campus network of Media Broadcast

- Exploiting the potential of 5G Non-Public Networks (NPN) for media production
- Independent of available bandwidth and utilization of public 5G networks
- Up to four camera signals with one mobile LiveU unit transmittable

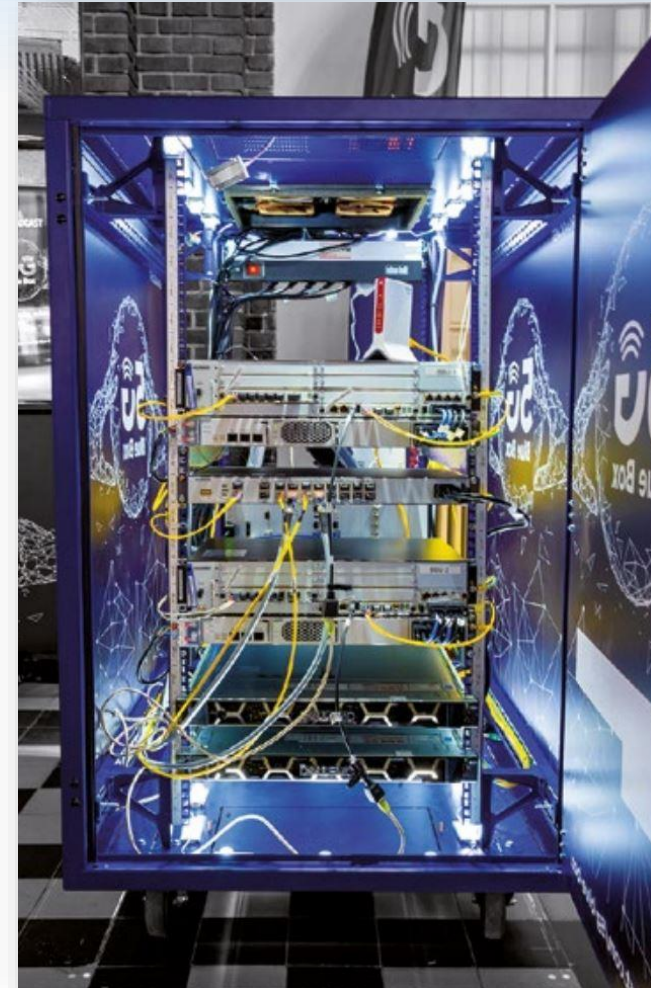


Source: Media Broadcast

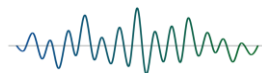
Media Broadcast was able to carry out a use case with a complete TV production chain.

5G Campus network: Media Broadcast

- **High bandwidth**
 - No load on the bandwidth due to external interference
- **Highest security level**
 - Private industrial frequency on own premises
- **Provider-independent**
 - Application area everywhere, where an own frequency spectrum from 3.7 GHz to 3.8 GHz is available
- **Mobile use everywhere**
 - Small and compact, packed in a flight case 80 x 120 x 100 cm (W x H x D)



Source: Media Broadcast



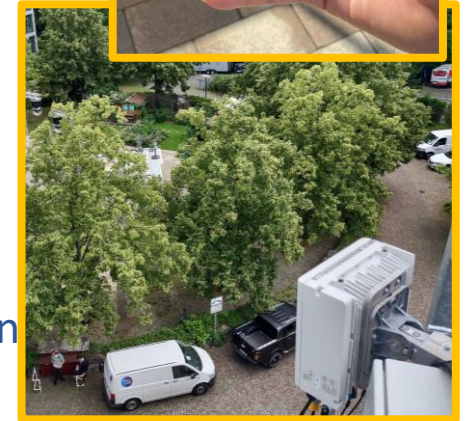
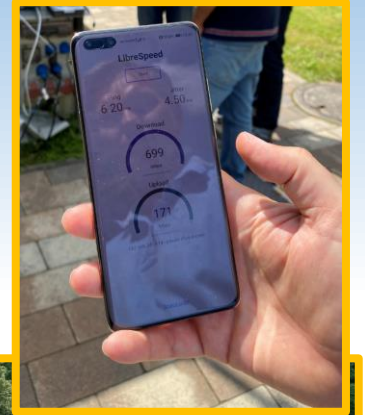
5G Campus network: SWR

VISION

- Production equipment to be connected to a 5G base station via 5G module
- Production is to be controlled from a remote location (e.g. Stuttgart) via a 5G core network.
→ Remote Production

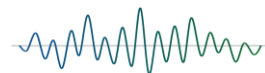
PROCEDURE

- Campus network at Baden-Baden (city in Germany) site to initially simulate remote production



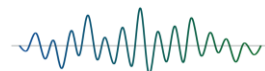
NEXT STEPS - Trials

- 5G Smartphone Production
- Classic production/5G



Summary

- 5G can be used to **improve technical and operational efficiency, increase flexibility, and reduce production cost.**
- 5G can be used to enable new production workflows, particularly in **remote production, news gathering, coverage of live events, and user engagement.**
- 5G campus networks also open up **new possibilities** in fields completely different from media production.
- The initial project showed that it was able to use 5G campus networks to implement a use case with a **complete TV production chain.**



Thank you. Merci. Gracias. 谢谢. Спасибо. شكراً



ARD-Competence Center Frequency Management

Dr. Khishigbayar Dushchuluun
Rundfunkplatz 1
80300 München

089 5900 97771
Khishigbayar.Dushchuluun@br.de

