

Local 5G networks for the automotive industry

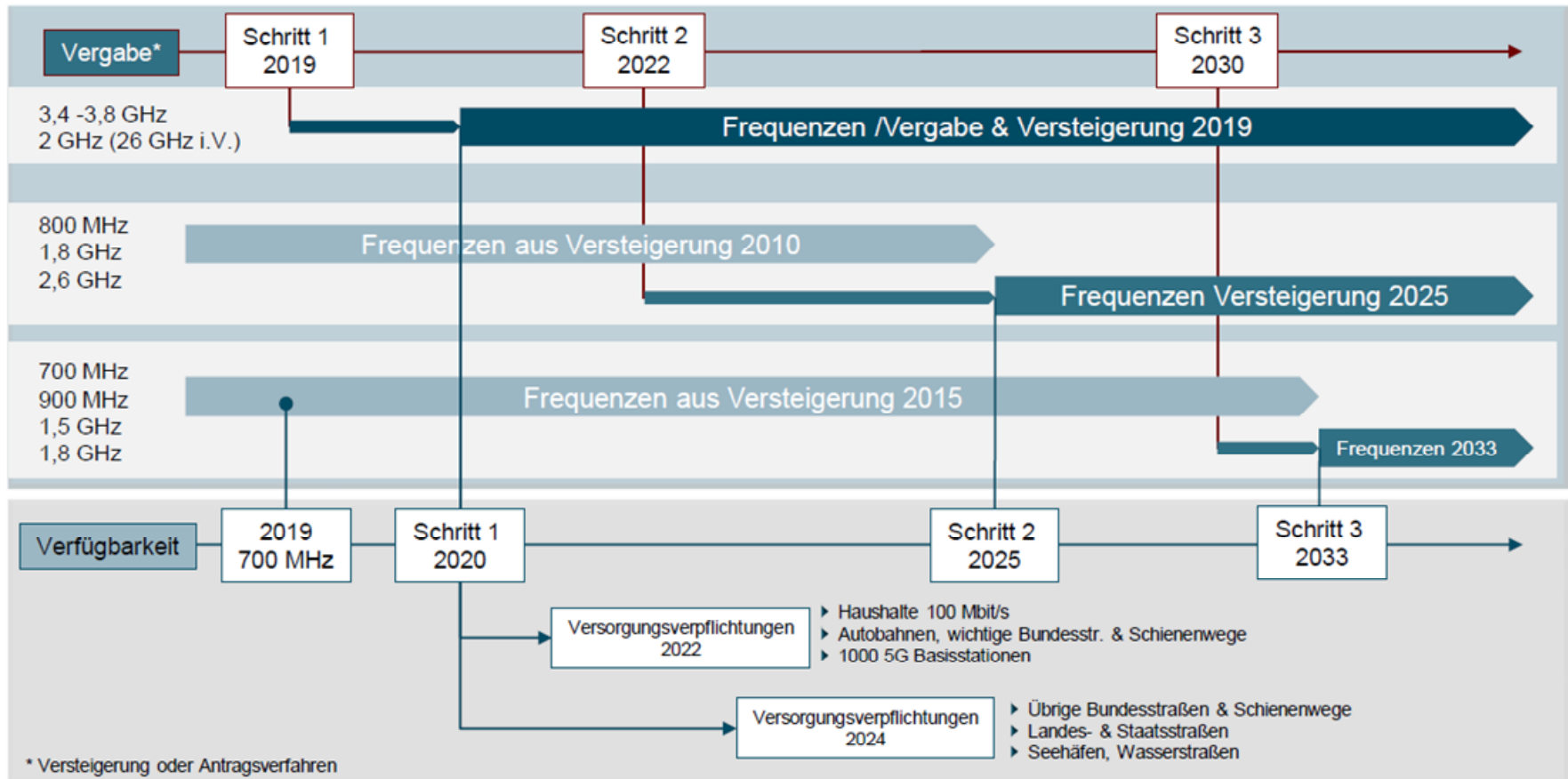
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CLEPA
European Association of
Automotive Suppliers
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European Background

- Commission Implementing Decision (EU) 2019/235 of 24 January 2019 on amending Decision 2008/411/EC as regards an update of relevant technical conditions applicable to the 3400-3800 MHz frequency band.
→ ECC Decision 11(06) of October 2018
- The regulatory authority of the respective member state implements the requirements.
- Member states have to balance between profitable auctioning of frequencies to MNOs and allocation to private individuals
- However, agreements with MNOs are always possible

5G: frequency allocation procedure in Germany



Quelle: BNetzA

5G: Opportunities for industrial companies

Decisions to be made:

- Get an own local frequency or use of the 3+1 MNOs
- Set up cooperation with mobile/service suppliers
- Own determination of service level or reliance on MNO standards
- Costs and benefits consideration

Challenges:

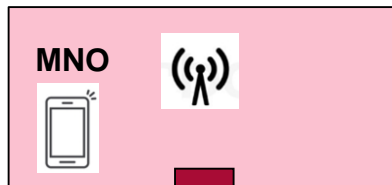
- Unique procedure so far
- Regulatory requirements to be observed!
 - Non-compliance can lead to revocation of the allocation!

5G: Opportunities for industrial companies



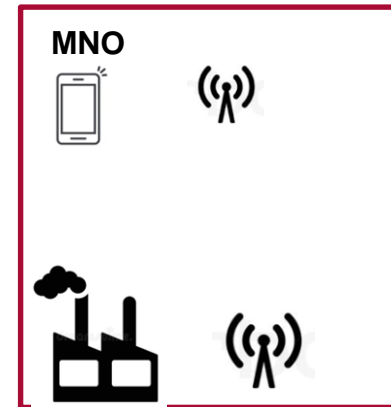
Island solution – Local Network

- Closed networks, e.g. company or campus network
- Connection to public network via (secure) fixed network WAN or VPN possible



Integrated solution with public network

- Open private company and campus network via antenna systems of the public mobile network provider or new antennas to be set up
- Synergy effects through simultaneously improved public mobile radio coverage on campus



"Slicing" solution with public network

- Public network parallel to the private network (VPN) > Extension by the "3+1" operators
- Private applications in the local network (logical separation with prioritization or purely local data traffic)

Key considerations “make or buy” own 5G network

- Guaranteed network coverage
- Autonomy, flexibility
- Data sovereignty
- Tailor-made for individual and specific requirements
- Fail-safe, attack-safe, operable
- Fast implementation, fast commissioning
- Competitive advantage - expanded service portfolio for business customers
- Existing know-how?
- Development efforts/costs
- Contractual relationships with hardware/software mobile phone suppliers

5G: Regulatory requirements

Basic framework conditions of the application procedure:

1. Frequency usage provisions
2. Notification obligations
3. Time limit on allocation
4. Information about allocations
5. Fees

5G: Regulatory requirements

1. Frequency usage provisions

- Frequencies in the range 3.700 MHz to 3.800 MHz
- Allocation for local frequency use for properties or company premises
 - Essential: by type of economic use or by external appearance as a unit
 - Divergence from property classification possible (several property owners together)
 - Examples: Industrial parks, exhibition grounds, agricultural and woodland areas
- Field strength values not specified - but to ensure trouble-free use, if necessary, bid to negotiate between „neighbours“
- if necessary, technical specification for the reduction of interference by the BNetzA

5G: Regulatory requirements

1. Frequency usage provisions

- Allocation in 10 MHz blocks
- No protective bands to be specified, but protective distance to adjacent german-wide uses below 3,700 MHz to be maintained
- Necessary protection bands to other network operators are at the expense of the local networks operators
- Only TDD uses are permitted
- No telecommunication application for the public

Monitoring the frequency usage regulations:

BNetzA can request reports on the status of network expansion and frequency utilization and carry out on-site measurements!

5G: Regulatory requirements

2. Notification obligations

- Start and end of use
- Frequency transfer and relinquishment
- Revocation possible if use has not commenced within one year of allocation or if frequency is used for more than one year for its intended purpose.

3. Time limit on allocation

- On request up to 10 years
- Extension possible – § 55 Abs. 9 TKG
- Maximum until 31 December 2040

5G: Regulatory requirements

4. Information about allocations

- Announcement of frequency allocation with name of owner or third party in case of legitimate interest (enabling operator agreements for neighbouring local applications)

5. Fees

- Steering fees are set by BNetzA
- Frequency usage contributions and contributions pursuant to the Electromagnetic Compatibility Act and the Radio Installations Act are determined annually.

5G: Application

Required application documents:

1. Application for area allocation or determination of the site-specific usage parameters of the base stations
2. Frequency usage concept
3. Proof of entitlement to apply
4. Proof of expertise, capability and reliability
5. Operator agreements concluded, if applicable

1. Application

Application for frequency allocation

- Excel file
- Applicant, contact person
- Size of the area (m²)
- Desired start frequency and bandwidth, each in MHz
- Specification of the fixed-term date, if the allocation is to be valid for < 10 years.
- Coordinates of the area in WGS84 format

Application for the base station

- Desired centre frequency and bandwidth, further technical parameters
- Station coordinates in WGS84 format

2. Frequency usage concept

- Comprehensible and plausible presentation of frequency requirements
 - Type of application (industry, agriculture, etc.)?
 - Purpose (machine control, internal communication)?
- Plausibility check based on planned business model
- How is efficient use of spectrum ensured?
 - Mitigation techniques for interferences
 - Type, location, height, orientation, shielding measures of the antennas
 - Indoor/Outdoor use
- Explanation of the technology used, the network structure, number and equipment of the base stations, etc.
- How long is the planned period of use?
- Presentation planning of the network construction and expansion

3. Proof of entitlement to apply

- Proof by the applicant that a right to apply exists
 - Ownership, right of use of the land or commissioning by an entitled party
 - If no own property, consent of the owner must have been granted
- Responsibility for compliance with frequency allocation, including transfer to third parties
 - Transfer of frequency allocation to third parties requires approval by the BNetzA, § 55 Par. 8 TKG
- Eligibility for application must be valid for the entire duration of the frequency allocation.
- Revocation otherwise possible!

4. Proof of important qualities

Information on the applicant or commissioned company/person

- Expertise:
 - Sufficient knowledge to properly install and commission the radio transmitters used
- Capability:
 - Obligation to pay fees and contribution due on time; assurance that sufficient financial resources are available for network construction, development and operation.
- Reliability:
 - No reasons for unreliability (in the past)

5. Operator agreements

- In order to ensure radio compatibility, applicants from neighbouring properties should reach agreements to avoid disruptions of operations (obligation to negotiate).
- Contrary with regards to public mobile network operators: the applicant must ensure that its local use is free from interference.
- Concluded operator agreements must be submitted to the BNetzA and explain:
 - Exact designation of the areas concerned (as in the application)
 - Presenting a concrete, detailed and comprehensible agreement

Your contact persons



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