

Wireless broadband in the 700MHz band - Europe after the German auction

The 700 MHz award process in Germany

10.9.15 Digital Executive Club - Brussels

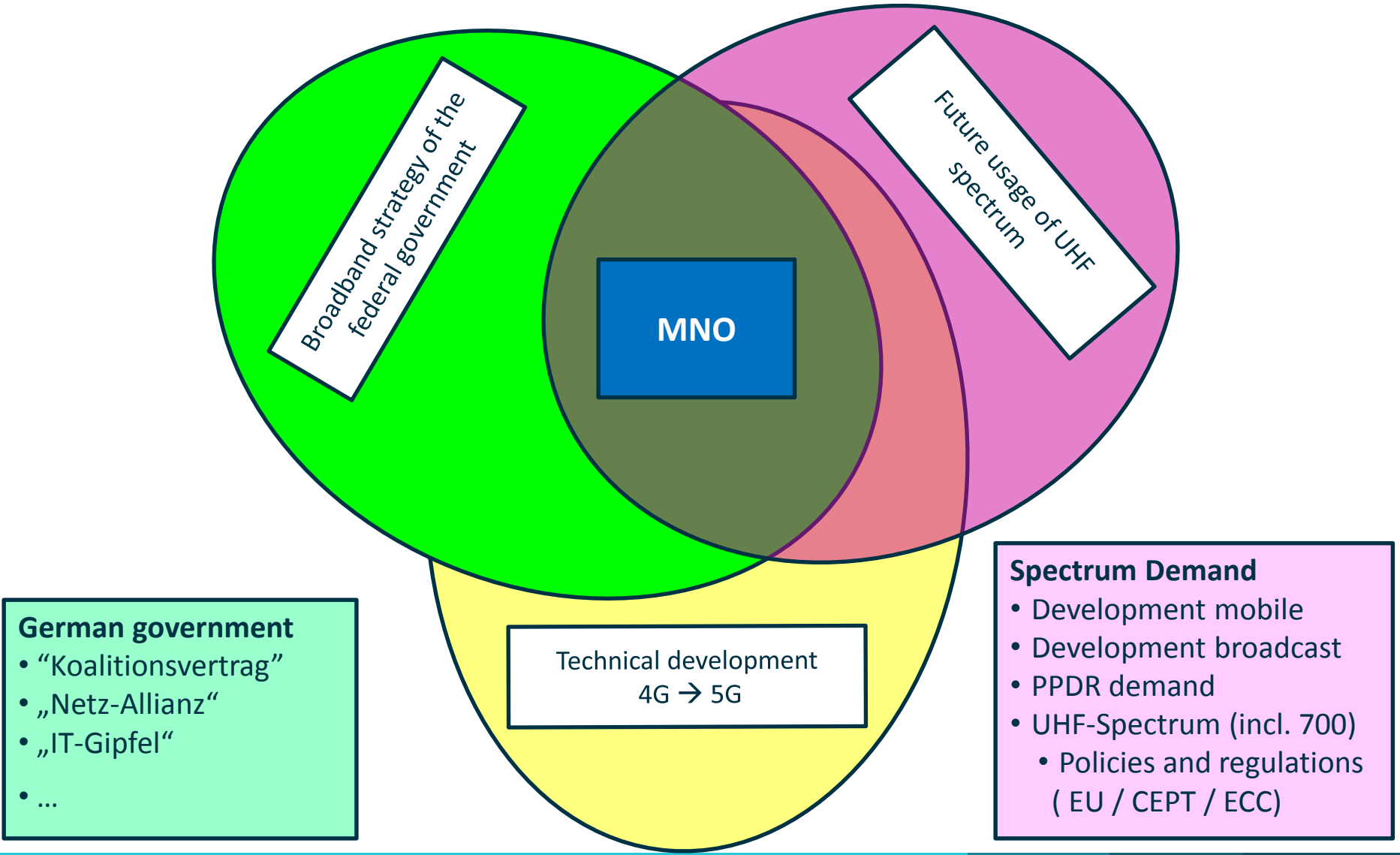
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The 700 MHz award process in Germany

1. 700 MHz in the context of the German broadband strategy
2. 2015 auction for 700 / 900 / 1500 / 1800 MHz usage rights
3. Coverage obligations
4. Migration of existing services and availability of 700 MHz spectrum for mobile
5. After the German 700 MHz award process



Overall political goals

02/2009: Initial German broadband strategy

- *1 Mbit/s for everyone until 2010, 50 Mbit/s for 75% households until 2014*
- *Goals to be reached by using all fixed and mobile technologies*
- *Early 800 MHz auction to help reaching the goals (1st EU auction)*

08/2014: Update of initial German broadband strategy in “Digitale Agenda 2014-2017”

- *50 Mbit/s for everyone until 2018*
- *Goals to be reached by using all fixed and mobile technologies (including by broadband state aid programs)*
- *Early 700 MHz auction to help reaching the goals (1st EU auction)*

Corresponding BNetzA proceedings (“Projekt 2016”)

02/2012: MWC-12 identifies 700 MHz spectrum for mobile on co-primary basis

05/2012: BNetzA envisages to include 700 MHz spectrum in ongoing proceedings concerning 900 / 1800 MHz legacy spectrum

06/2013: BNetzA intends to auction expiring 900 / 1800 MHz with newly available 700 (and 1500 MHz usage rights)

07/2013-08/2014: *Announcement and approval of Telefónica Deutschland / E-Plus merger*

12/2014: Political consensus between German government, federal states and broadcasters to include 700 MHz in envisaged auction, based on:

- Financial agreement to split (700 MHz) auction revenue 50/50 between Bund + Länder
- Financial compensation for migration of PMSE users
- Implementation transition-period for migration DVB-T → DVB/T2

01/2015: Final BNetzA decision to auction 700, 900, 1500 and 1800 MHz usage rights

03/2015: BNetzA admits DT, TEF.DE and VF to participate in 2015 spectrum auction

2015 auction for 700/900/1500/1800 MHz usage rights

Auction details:

- From 27.5.-19.6.2015: SMR auction with 3 admitted bidders (DT, TEF.DE + VF)
- Tough bidding competition during 181 rounds on 16 bidding days
- **Total auction prices: 5.081.236.000 €**

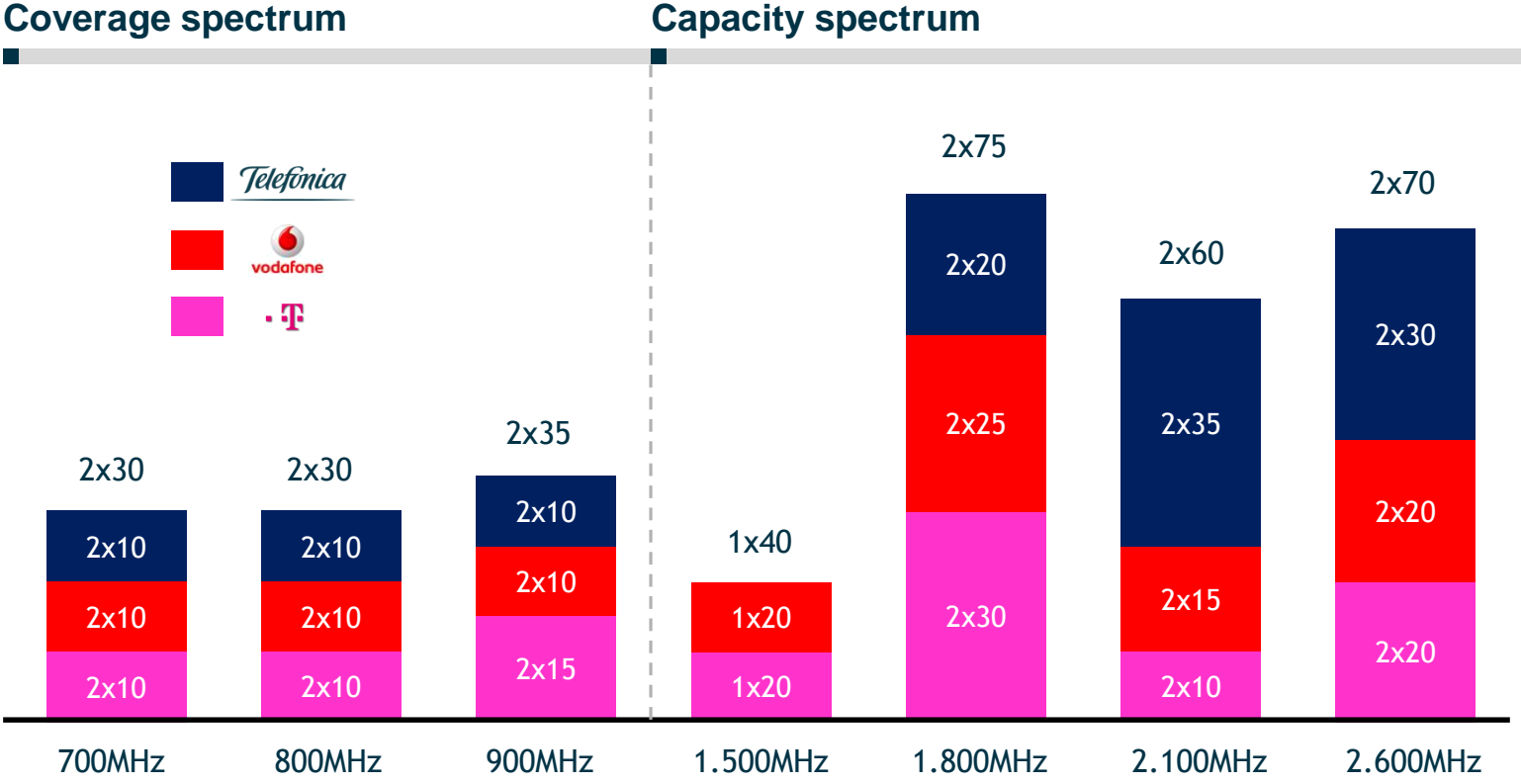
700 MHz details:

- 2 x 30 MHz were auctioned in 6 blocks à 2x5 MHz
- Reserve price per 2 x 5 MHz: 75 million €
- Lowest block (“700-A”): Concrete Allocation (due to usage restrictions)
- Other blocks (“700-B” to “700-F”): Abstract Allocation
- **Total amount of 700 MHz prices: 1.000.445.000 €**

Frequenzbereich	Block	Ausstattung	Höchstbieter	Höchstgebot (€ in Tsd.)
700 MHz (gepaart)	700 A	2x5 MHz konkret	TEF DE	166.397
	700 B	2x5 MHz abstrakt	Vodafone	165.509
	700 C	2x5 MHz abstrakt	TEF DE	166.847
	700 D	2x5 MHz abstrakt	Telekom	166.567
	700 E	2x5 MHz abstrakt	Telekom	171.649
	700 F	2x5 MHz abstrakt	Vodafone	163.476

Rundenergebnis der Runde 181				
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	700 F	2x5 MHz abstrakt	Vodafone	163.476
900 MHz (gepaart)	900 A	2x5 MHz konkret	TEF DE	195.520
	900 B	2x5 MHz abstrakt	Vodafone	211.807
	900 C	2x5 MHz abstrakt	Vodafone	203.298
	900 D	2x5 MHz abstrakt	Telekom	183.671
	900 E	2x5 MHz abstrakt	Telekom	180.968
	900 F	2x5 MHz abstrakt	Telekom	180.465
	900 G	2x5 MHz abstrakt	TEF DE	189.958
1,8 GHz (gepaart)	1800 A	2x5 MHz abstrakt	Vodafone	237.494
	1800 B	2x5 MHz abstrakt	Telekom	248.054
	1800 C	2x5 MHz abstrakt	Vodafone	258.247
	1800 D	2x5 MHz abstrakt	Vodafone	249.133
	1800 E	2x5 MHz abstrakt	Telekom	248.101
	1800 F	2x5 MHz abstrakt	Vodafone	255.967
	1800 G	2x5 MHz abstrakt	TEF DE	239.228
	1800 H	2x5 MHz abstrakt	Telekom	248.784
	1800 I	2x5 MHz abstrakt	TEF DE	240.288
	1800 J	2x5 MHz konkret	Vodafone	180.153
1,5 GHz (ungepaart)	1500 A	1x5 MHz abstrakt	Vodafone	40.939
	1500 B	1x5 MHz abstrakt	Vodafone	40.939
	1500 C	1x5 MHz abstrakt	Vodafone	40.919
	1500 D	1x5 MHz abstrakt	Telekom	42.964
	1500 E	1x5 MHz abstrakt	Vodafone	42.961
	1500 F	1x5 MHz abstrakt	Telekom	39.011
	1500 G	1x5 MHz abstrakt	Telekom	40.961
	1500 H	1x5 MHz abstrakt	Telekom	40.961
Summe aller gehaltenen Höchstgebote (€ in Tsd.)				5.081.236
Zahlungsverpflichtung aufgrund zurückgenommener Höchstgebote (€ in Tsd.)				0
Summe (€ in Tsd.)				5.081.236

Post-auction spectrum holdings



Paired 700, 800, 900, 1.800, 2.100, 2.600 and new 1.500 download spectrum shown. Unpaired 2.100 and 2.600 not shown.

MNO-specific coverage obligation:

Within 3 years of spectrum allocation:

- 50 Mbit/s download speed per antenna sector so that 10 Mbit/s download speed is reached in / at
 - at least 98% of nationwide households AND
 - at least 97% of the households within every federal state AND
 - all main traffic routes

Obligations can be fulfilled with any spectrum (not only 700 MHz)

Phased approach for 700 MHz band (incl. DVB-T Simulcast)

BNetzA auction decision (28.01.2015):

- 700 MHz partly available as of mid-2017
- 700 MHz full availability around mid-2019
- Annex 7 describes phased national approach incl. simulcast phase
- Annex 8 describes info re DVB-T usage in neighbouring countries

Kanal 49 bis 60 - AUT (Österreich)

Status	Rundfunksender	Kanal	ERP in dBW	Administration	Längengrad	Breitengrad
B	Ehrwald 1	49	25,0	AUT	010E58 59.000	47N25 13.000
B	Gries Sellrain	49	15,0	AUT	011E09 21.000	47N11 25.000
B	Holzgau	49	23,0	AUT	010E22 21.000	47N15 42.000
B	Imst 1	49	22,5	AUT	010E45 22.000	47N12 20.000

Rundfunksenderliste Deutschland

Frequenznutzungen des terrestrischen digitalen Fernsehfunks im Frequenzbereich 694 MHz bis 790 MHz (Kanäle 49 bis 60)

Deutschland – Stand Januar 2015

Phasen

Phase 1	Ballungsraum-Regionen	
	Simulcast DVB-T2 vorlaufend	01.05.2016 – 28.03.2017
	Simulcast DVB-T nachlaufend	28.03.2017 – 31.12.2017
	DVB-T2 temporär	28.03.2017 – 01.07.2019
Phase 2a	Regionen mit Mittelzentren	
	Simulcast DVB-T nachlaufend	24.10.2017 – 01.07.2018
	DVB-T2 temporär	24.10.2017 – 01.07.2019
Phase 2b	Regionen mit Mittelzentren	
	Simulcast DVB-T nachlaufend	13.03.2018 – 31.12.2018
	DVB-T2 temporär	13.03.2018 – 01.07.2019
Phase 3	Fläche	
	DVB-T2 final	ab 31.12.2018

- Meilenstein I 01.05.2016
- Meilenstein II 28.03.2017
- Meilenstein III 24.10.2017
- Meilenstein IV 13.03.2018
- Meilenstein V 31.12.2018

After the German 700 MHz award process

MWC-15

Final 700 MHz assignment for mobile on co-primary basis

Cross-border issues

- BNetzA discusses with neighboring countries to quickly dedicate 700 MHz for mobile to prevent interference in border regions
- EU policy deadline would be helpful that 700 MHz band shall asap be made available for mobile in entire EU

700 MHz payment terms

“Pay when available” rule in 700 MHz award processes might help to speed-up in-country band clearance for mobile

Telefonica

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