




AKOS

5G for verticals

**Universal Connectivity in Europe:
The Current State and the Future Prospects**
Budva, 28th – 29th September 2023

- ④ General introduction
 - ④ Draft Strategy - Actions
 - ④ 3rd RSPG opinion
 - ④ Public tender
- 



Action 5: If interest is expressed, award the remaining spectrum in the 2300 MHz and 3600 MHz verticals for local use.



Action 6: To award the 410-430 MHz band for verticals on a technology/service neutral basis for the RS area.



Action 7: Assist in the procedures for the award of spectrum for PPDR (if requested)



Action 8: Award 28 GHz band for BWA (technology/service neutral for local use)

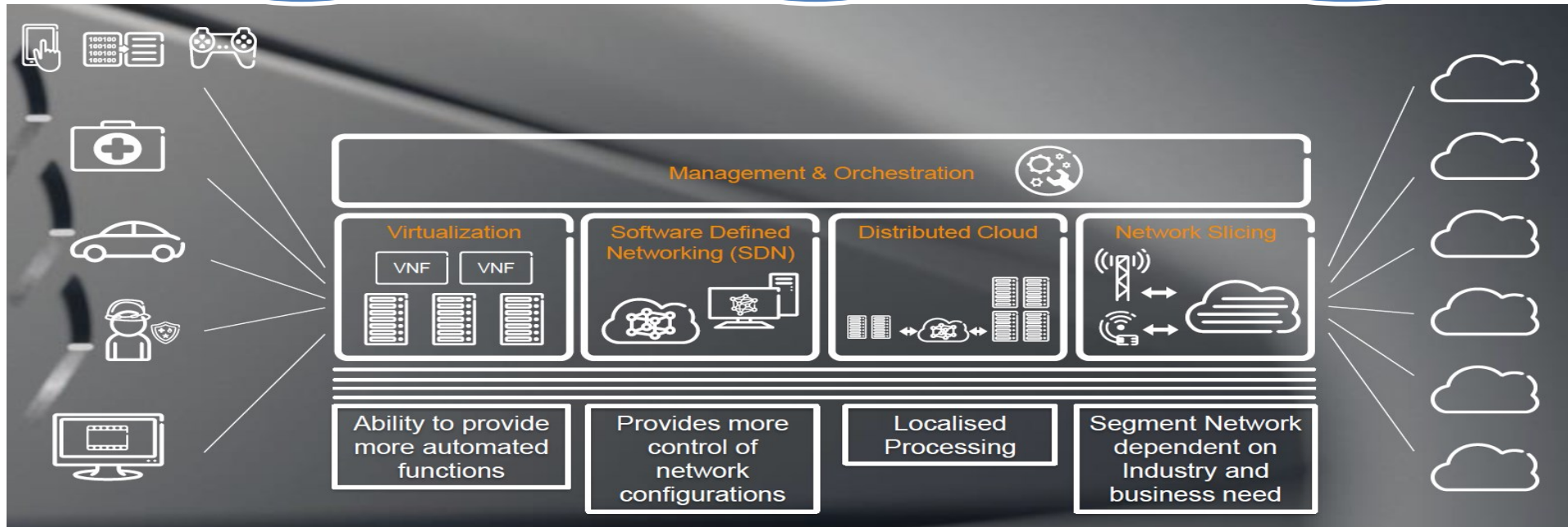
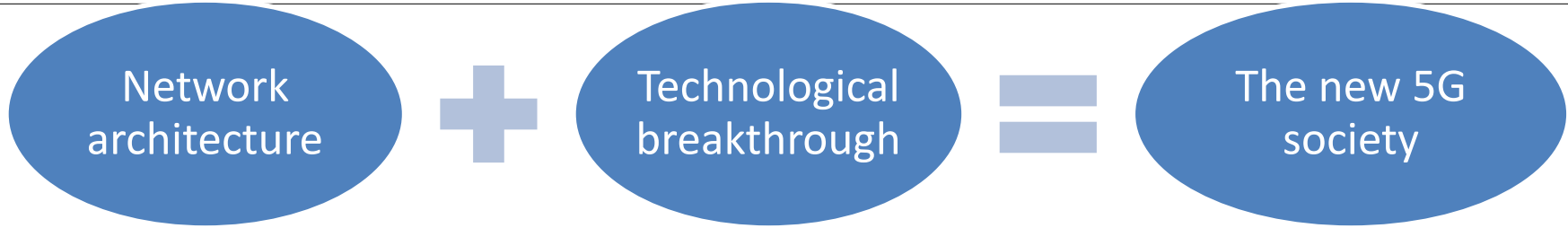


Action 9: Award the 3800 - 4200 MHz band for low and medium power base stations, predominantly for verticals



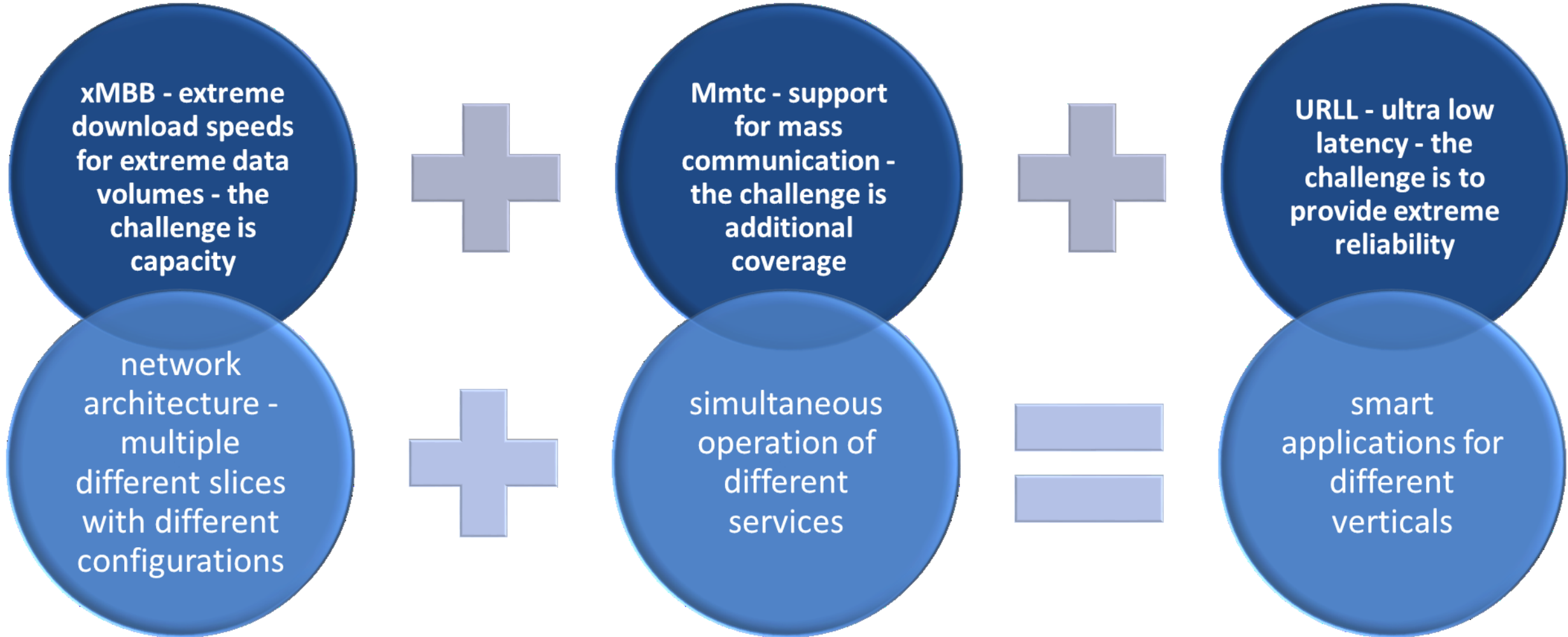
Action 10: By the end of 2025, make the transition from the use of frequencies in the 450 MHz spectrum to the use of harmonised spectrum for pan-European verticals

5G - The technological leap

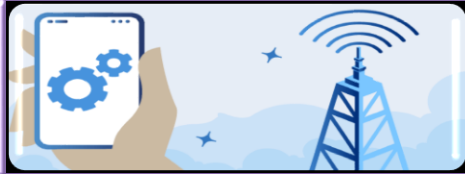


- 10-100x END-USER DATA RATES
- 1000x MOBILE DATA VOLUMES
- 5x LOWER LATENCY
- 100x MORE DEVICES
- COST DEVICE COST REDUCTION
- 10+ YEARS BATTERY LIFE
- +20dB BETTER COVERAGE

5G - SMART APPLICATIONS FOR VERTICALS



- ④ EU Member States have already started to implement the recommendations of the first and second opinions of the Radio Spectrum Policy Group (RSPG) on priority bands for 5G networks and have amended their allocation tables (Radio Frequency Allocation Plans) accordingly, while some have already launched public tenders with public auctions.
- ④ The third RSPG opinion, in addition to recommending de-fragmentation of bands in the 3400-3800 MHz frequency range, also discusses the importance of verticals and their transition to 5G technology.



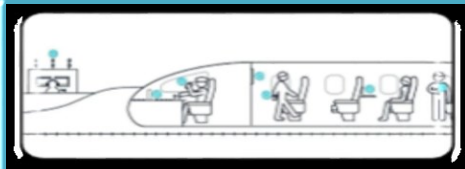
1) Via mobile operators



2A) Via dedicated networks - regional/national



2B) Via dedicated networks locally



3) Pan-European verticals





1) Via mobile operators









2A) Via dedicated networks - regional/national



2B) Via dedicated networks locally



3) Pan-European verticals

-  Business-specific applications that require constant development that the operator cannot keep up with.
-  The application requires coverage in challenging areas
-  Some verticals require too specific and too expensive KPIs for their services
-  Operator does not have a business model for 5G coverage
-  Some verticals want to keep full control of their network for security reasons,
...
-  Dedicated spectrum is needed for such verticals



1) Via mobile operators



2A) Via dedicated networks - regional/national



2B) Via dedicated networks locally



3) Pan-European verticals



Spectrum in the 400 and 700 MHz bands

- ④ 2021 auction for M2M in the 700 MHz band - ODRF BeeIN
- ④ Re-award in 2024
- ④ 700 MHz for PPDR - Action 7
 - ④ 700 MHz

Bands	694-698	698-703	703-733	733-736	736-738	738-743	743-748	748-753	753-758	758-788	788-791	
PPDR 2x3 MHz			UL MFCN Band 28							DL MFCN Band 28		
PPDR 2x5 MHz		UL PPDR							DL PPDR			
M2M 2x3 MHz					UL M2M							DL M2M
SDL 4x5 MHz							DL MFCN SDL					
PMSE	PMSE					PMSE						
Block Size [MHz]	4	5		30	3	2	5	5	5		5	30

- ④ 400 MHz: Actions 6 and 7

Action 6: 410-430 MHz - business critical use, Action 7: 450-470 MHz - PPDR

410	412.5	415	417.5	420	422.5	425	427.5	430	435	440	445	450	452.5	455	457.5	460	462.5	465	467.5	
Band 88		↑	Band 88		↓	Band 87		↓	Band 31		↑	Band 72		↑	Band 31		↓	Band 72		↓
Band 87		↑	Band 87		↓	Band 72		↑	Band 73		↓	Band 72		↓	Band 73		↓	Band 72		↓



1) Via mobile operators



2A) Via dedicated networks - regional/national



2B) Via dedicated networks locally



3) Pan-European verticals



1) Via mobile operators



2A) Via dedicated networks - regional/national



2B) Via dedicated networks locally



3) Pan-European verticals

- ③ 3 blocks of 50 MHz spectrum
- ③ Verticals/local use
- ③ Implementation in 3 phases
- ③ Who can apply:
 - ③ verticals or
 - ③ existing mobile operators or
 - ③ potential new niche operators.



2300 MHz	20 MHz	40 MHz	30 MHz	10MHz
TDD		T-2	Telemach	

3600 MHz	20 MHz	140 MHz		140 MHz	100 MHz
TDD		Telekom Slovenije		Telemach	A1 Slovenija

includes the lower 10 MHz with restrictions to protect radar services

To use any radio frequencies acquired for its own purposes to provide wireless electronic communications services in such a way that:

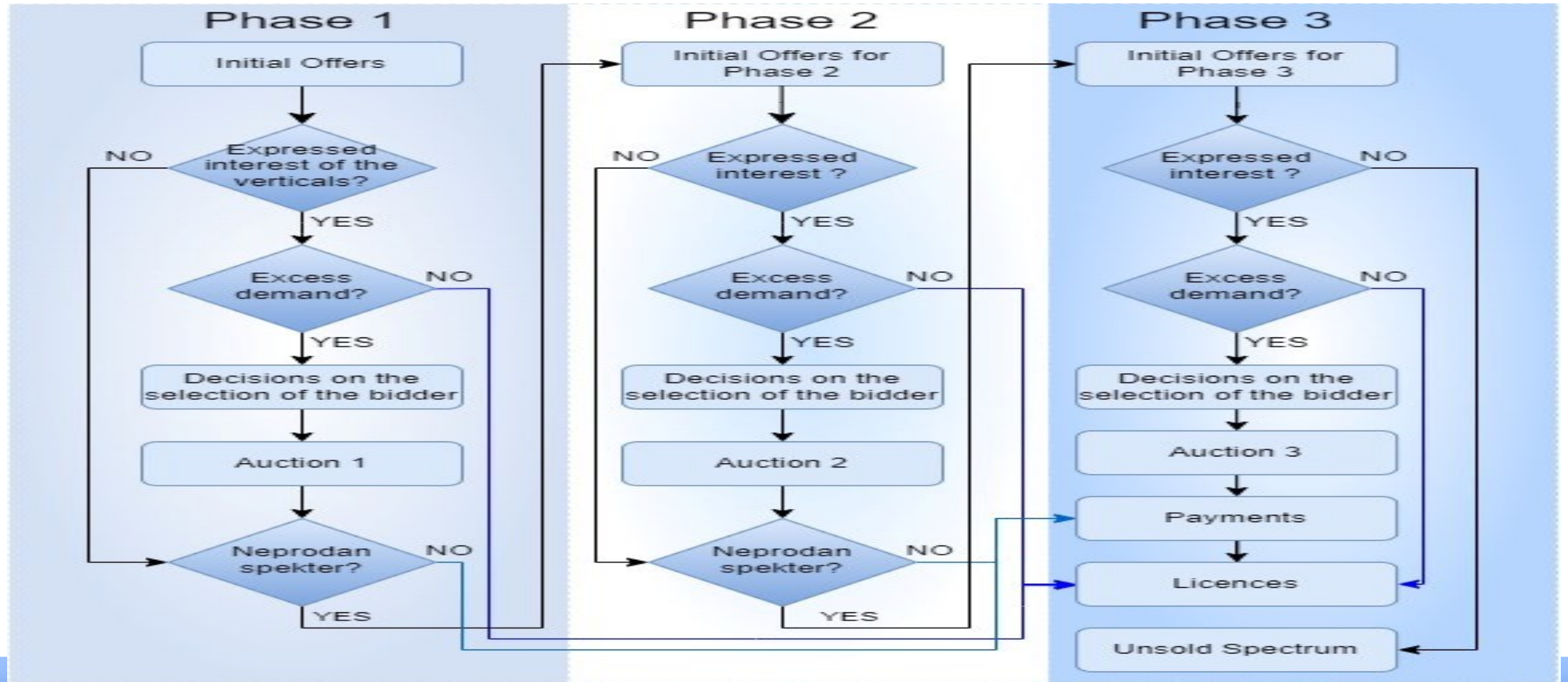
- ④ within 2 years cover at least 25% of its campus area or key line network locations,
- ④ within 3 years, cover 70 % of its campus area or key line network sites,
- ④ within 4 years, cover 90% of its campus area or key line network sites.

If the bidder that will acquire spectrum under this call for tenders in Phase 1 fails to fulfil the above obligations by the deadlines and does not itself apply for cancellation, the Agency shall initiate the procedure for cancellation of the ODRF, without reimbursement of the administrative costs paid and the amount paid for the efficient use of the scarce natural good.

In each band commercially enable service to at least one vertical in such a way that:

- ④ In 2 years setting up
 - ④ at least 1 base station for each assigned municipality, in such a way as to cover at least 5% of the population in each municipality **or**
 - ④ 25% of its campus area,
- ④ In 3 years ensure coverage of
 - ④ 25% of the population with each of the assigned frequencies in each municipality **or**
 - ④ 10% of the territory in each municipality **or**
 - ④ 70% of the area of its campus,
- ④ In 4 years ensure coverage of
 - ④ 40% of the population with each of the assigned frequencies in each municipality **or**
 - ④ 20% of the territory in each municipality **or**
 - ④ 90% of its campus area.

If, at any time during the term of the ODRF, the vertical fails to sign a contract with the ODRF holder by the deadlines for the above obligations or withdraws from the contract, the ODRF holder shall be subject to the coverage obligations relating to the coverage of the population or territory of the municipality



Block	Bandwidth [MHz]	Frequency band	Assignment period
A1_[xxx]	1 x 20 MHz	2300 – 2320 MHz	From assignment until 1.1.2042
A2_[xxx]	1 x 10 MHz	2390 –2400 MHz	From assignment until 1.1.2042
B_[xxx]	1 x 10 MHz	3410 – 3420 MHz*	From assignment until 15. 6. 2041

- ④ **Spectrum caps - 1 block per municipality (limit applies in Phase 1 and Phase 2)**
- ④ **Ranking of selections in the bid - use mark 1, or 1 and 2, or 1 and 2 and 3 (in Phase 1 and Phase 2)**
- ④ **Minimum acceptable selection of municipalities for the block - mark 'Selection 1', 'Selection 2', 'Selection 3', 'Selection 4' or 'Selection 5' with an X - maximum 100 municipalities (in Phase 1 and Phase 2)**

