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Agencija za komunikacijska omrežja
in storitve RS
Stegne 7, p.p. 418
1001 Ljubljana
info.box@akos-rs.si

Ljubljana, 02. 09. 2020

Sklic: **38144-3/2020**

Zadeva: **Pripombe na osnutek informacijskega memoranduma v zvezi z javnim razpisom z javno dražbo za dodelitev radijskih frekvenc**

Spoštovani,

sklicujemo se na dne 3.8.2020 objavljen poziv Agencije za komunikacijska omrežja in storitve za podajo pripomb na osnutek formativnega memoranduma, ki podaja osnutke pogojev in zahtev javnega razpisa z javno dražbo za dodelitev radijskih frekvenc za zagotavljanje javnih komunikacijskih storitev končnim uporabnikom v radiofrekvenčnih pasovih 700 MHz, 1500 MHz, 2100 MHz, 2300 MHz, 3600 MHz in 26 GHz.

Družba Telemach pripombe podrobno podaja v prilogi tega dopisa.

S spoštovanjem,

Tony Štupar
Oddelek za pravne zadeve in regulativo

Telemach d.o.o. 12

Priloga:

- kot v besedilu

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COMMENTS ON A DRAFT INFORMATION MEMORANDUM FOR THE PUBLIC TENDER FOR THE AWARD OF RADIO FREQUENCIES FOR PROVISION OF PUBLIC COMMUNICATIONS SERVICES IN RADIO FREQUENCY BANDS 700 MHz, 1500 MHz, 2100 MHz, 2300 MHz, 3600 MHz and 26 GHz

1. Introduction

Telemach Slovenia welcomes the publication of the draft Information Memorandum for the multiband spectrum award. The release of additional spectrum for mobile use in Slovenia is overdue, and it is imperative that this award takes place as soon as practically possible. For Telemach, access to new frequency bands and certainty over our long-term holdings in the 2100 MHz spectrum is essential to support our ambitious plans to enlarge and upgrade our network, offer best-in-class 4G and 5G services, and continue to grow our market share. In recent years, our ambitions to compete even more strongly with the country's two legacy mobile operators has been constrained significantly by our lack of access to new spectrum, below 1-GHz for coverage and above 1 GHz for capacity.

In this context, we support the decision by AKOS to proceed with a large, simultaneous award of all available mobile bands. In general, we have a preference for smaller, lower risk spectrum award events. However, at this point in time, the benefits associated with bringing all the available spectrum into the market as soon as possible outweigh any upside associated with delaying award of some bands. Moreover, given that bidders may have substitutable demand across some bands, such as 2100, 2300 and 3500 MHz, it is prudent to proceed with an auction that allows bidders to switch demand across all these bands.

Nevertheless, it is important to recognise that a multi-band auction of this scale and scope will shape the competitive landscape for mobile in Slovenia for at least the next decade. Running a single award in which over 60% of usable mobile spectrum is being assigned unavoidably exposes mobile operators to substantial risk.

We have three main concerns which are linked to the size and importance of the award, and these must be addressed in the auction rules:

1. **Competition.** Without adequate protections, there is a risk that the two largest operators acquire too much spectrum, thereby extending spectrum asymmetry and limiting the ability of rivals to compete across all segments of the market. To continue as vibrant competitors, each of the three largest operators must acquire a critical mass of spectrum in each different spectrum group: low band spectrum below 1 GHz for coverage; mid-band spectrum from 1800 MHz through 3500 MHz for capacity; and 3500 MHz spectrum specifically for high-speed 5G. The auction should also allow for aspiring fourth operators to test their business cases, but they may need much less spectrum if they are not planning to roll out nationwide networks. The best way to protect competition is through setting spectrum caps and reservations that ensure each operator is positioned to buy at least a critical mass of spectrum to support their business and no operator is able to buy more than they need for anti-competitive motives.

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2. **Excessive financial burden.** We welcome the decision to set meaningful but realistic coverage obligations which take account of the starting position of the winning bidders. This is important to ensure the auction attracts serious bidders but does not overburden smaller players. However, the deposit and payment terms proposed are very onerous, and may inhibit bidders from expressing full value for spectrum. We put forward proposals to ease deposit requirements, extend payment terms over the lifetime of the licences, and to set reasonable reserve prices.

3. **Disproportionate restrictions on active sharing**. Though the infrastructure sharing is a common experience in the majority of EU countries, the limitations placed on the operators by allowing active sharing merely in exceptional cases do have the potential to slow the adoption of 5G by driving up costs and cause an increase EM pollution. The benefit to wider welfare considerations would be better realized by removing the obstacles to cooperation for faster rollout, reduction in costs and better coverage.

AKOS's proposed design includes some features that help ease competition risks but it should go further. The proposal to cap low-band FDD holdings at 2x35 MHz – which is just under 37% of low-band FDD spectrum – is a good first step. A cap at this level ensures that up to 26% of spectrum is available for a third operator. We view this as the minimum level necessary to ensure that two large operators cannot tacitly coordinate to squeeze out a third player. We request that AKOS adopt the same approach for other categories of spectrum. Specifically, it should apply the same 37% precedent to all mobile spectrum, to all capacity spectrum (1800 MHz through 3500 MHz) and to the 3500 MHz band, given it unique essential role for 5G. These caps would replace the all spectrum and capacity band caps proposed by AKOS, which are not sufficiently strong to protect the three-player market. Such caps are necessary to ensure there cannot be a continuation of the current situation where spectrum shares between Slovenian operators are the most asymmetric in Europe.

We also request that AKOS apply the 2x10 MHz reservation offered to T2 to all four mobile operators. For Telemach, 2100 MHz is an essential resource, and it would be hugely disruptive to our customers if we do not secure continued use of this band. The same may be true for Telekom and A1. We expect to be strong enough to win a significant quantity of 2100 MHz in an auction where bidders compete based on intrinsic value. Nevertheless, we are worried we may come up against bidders who see an anti-competitive value to block us, and we may not be strong enough to compete in that case. Hopefully, our concerns are misplaced, but AKOS does not need to expose us or the Slovenian people to such risk. Offering us (and A1 and Telekom) the same 2x10 MHz reservation as T2 removes the risk, while still allowing for competition for different amounts of 2100 MHz.

Ahead of this consultation, we were concerned about the choice of auction format. Having reviewed carefully the proposed rules, we were pleased to discover that AKOS and their consultants have identified a good design. Although not previously used in Europe, we understand that the eSMRA format has been used successfully in Australia and the USA, and has a good track record of delivering competitive auction outcomes at fair prices, in particular in multi-category settings. In particular, we think it is a better choice than the previously used Combinatorial Clock Auction (CCA), which is

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unnecessarily complex and has been associated with a number of perverse, high price auction outcomes in other countries. We are confident that the format could deliver an efficient award outcome, provided AKOS takes additional action to further protect participants against the risks set out above.

We generally support other aspects of the award, although we have a number of detailed comments and suggestions for modest changes, set out below. These include reductions to the minimum requirements proposed at 2300 MHz and 3500 MHz, so as to discourage gaming in these bands.

Finally, we urge AKOS not to delay this process owing to concerns about running an award while the COVID-19 pandemic is on-going, unless conditions change markedly. In recent weeks, Austria, Finland, Luxembourg and the Netherlands have all successfully completed 5G awards with multi-round bidding. We are confident that AKOS, with the support of its consultants, can run a successful award at this time by deploying secure software over the Internet. We would welcome the opportunity to engage further with AKOS regarding any extra processes that might be put in place to ensure the safety of all involved and protect bidders against risk in case of unexpected disruptions.

The remainder of our submission is set out in six further sections, each focusing on a specific aspect of the award:

- Section 2: Competition measures
- Section 3: Auction format and rules
- Section 4: Payment terms, deposits and reserve prices
- Section 5: Licence duration and the new Communications Act
- Section 6: Coverage obligations and network sharing rules.

2. Competition measures

AKOS proposes a series of spectrum caps, a reservation and optional minimum requirements. These measures are designed to promote competition both within the auction and in the downstream market. Spectrum caps and reservations protect against an unduly asymmetric spectrum allocation which could harm downstream competition, while minimum requirements (together with the protection that spectrum caps offer against anti-competitive behaviour) encourage participation in the award, by diminishing risk for smaller bidders.

Such measures are particularly important in Slovenia, because competition in the market has been held back in recent years by the exceptional asymmetry in spectrum holdings between operators. Although Telemach has been successful to date in growing market share despite our low ratio of spectrum to market share, we are suffering from capacity constraints and have insufficient options to expand our 4G network. This limits our ability to compete in higher-value segments of the market. Indeed, without a huge increase in spectrum soon, our ability to compete in general will be curtailed.

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We welcome AKOS's proposals to apply spectrum caps and other pro-competitive measures. However, we believe the proposed spectrum caps and reservations are insufficient, whereas the minimum requirements go beyond what it necessary. In the following, we make the case for revisions to AKOS's proposals which would further its goal of promoting a competitive award, and ensure that the current era of extreme spectrum asymmetry comes to an end.

To support our arguments, we first revisit the issue of spectrum asymmetry, explaining why it is such a concern in Slovenia. We then explain our proposals for changes to the spectrum caps, reservations and minimum requirements, which we believe are necessary to end extreme spectrum asymmetry and support competition in the downstream mobile market.

2.1. Spectrum asymmetry

The Slovenian mobile market is characterised by huge asymmetries in spectrum holdings. As Figure 1 shows, Telemach has one of the smallest spectrum holdings in Europe whereas A1 and Telekom have some of the highest.[1] In fact, operators with lower holdings than us are typically not full service operators in their respective home market. Despite this significant disadvantage, Telemach has to date been an effective competitor against the established operators, bringing down prices for the benefit of all Slovenians since we entered the market in 2008.

[1] Given the short time available for this response, we have had not had time to update the figures. We can say with confidence that Telemach's position versus other European operators has only worsened, given that some other countries have had spectrum allocations in the intervening period.

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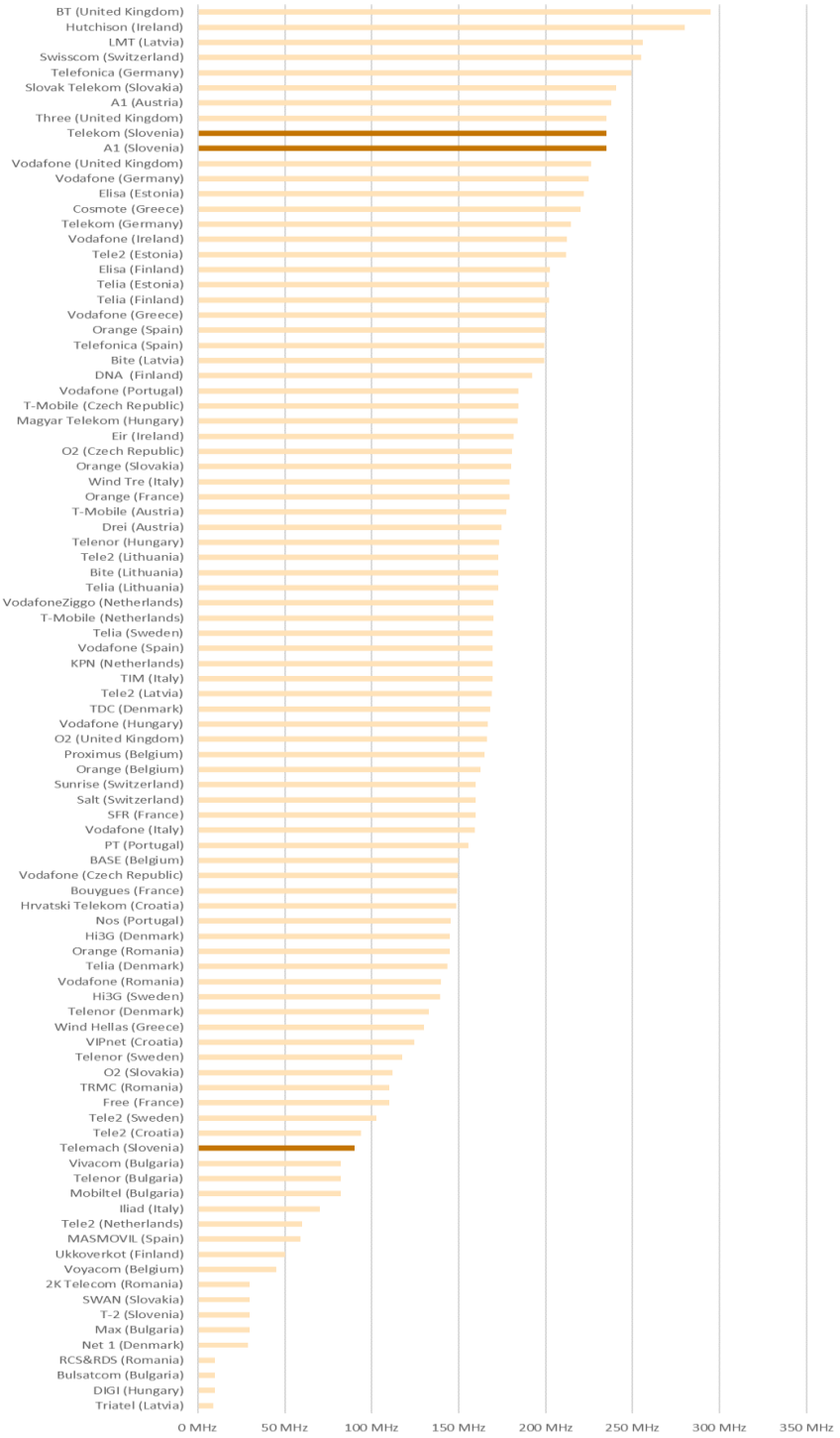
Figure 1: Spectrum holdings of European mobile operators (as of June 2018)



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Owing to the insatiable growth in data demand as well as our continued efforts to gain market share, Telemach now faces severe capacity constraints. In a report that we previously submitted to AKOS in 2018[2], with an update in 2020[3], Dr William Webb analysed our spectrum holdings and found that Telemach has limited ability to expand its network without acquiring significant new spectrum holdings unless it secures significant amounts of new spectrum in this auction. Dr Webb estimated that network investments, such as re-farming 2G and 3G spectrum to 4G, using new technology and adding more cell sites could perhaps allow Telemach to increase capacity by 130%, but that this would only equate to around two years of growth in data requirements – a period that expires this year (2020)!

Dr Webb concluded that:

> *"If an MNO has a lower relative holding of spectrum than other MNOs, it will have to make more extensive use of other approaches to enhancing capacity, which will have a higher cost. Given that all MNOs face similar cost of capital and similar requirements to deliver returns to investors, then this inevitable translates to higher consumer prices. However, in a competitive market, it may not be possible to raise prices. This tension eventually becomes unsustainable with pressure on the MNO to merge or exit."*

Not addressing the inherent cost-disadvantage that Telemach faces owing to its low spectrum holdings will ultimately result in higher prices for mobile services in Slovenia.

Why very asymmetric holdings can be detrimental for competition

Asymmetric spectrum holdings are not per se bad for competition as they may allow operators to differentiate their offerings. However, most regulators in Europe see very asymmetric holdings as problematic.[4] Capacity constraints play a key role in determining the level of competition in a market. When firms are subject to capacity constraints, their short-term gains from undercutting competitors are limited which in turn discourages then from engaging in price competition.

Since Telemach entered the market in 2007, it has been competing aggressively to gain market share. Consumers in Slovenia have benefitted greatly from this added competition as it has led to a reduction in prices. In a further report that we submitted to AKOS in 2018, Dr Aljoša Feldin showed that competition from Telemach has brought down prices for mobile services considerably which in turn has led to an increase in penetration and user migration from prepaid packages to subscription plans that deliver much higher value to users. Dr Aljoša Feldin estimates that the reduction in price created a total value of EUR 370 million between 2008 and 2014.

[2] dr. William Webb, Spectrum Asymmetry and its Effects on Mobile Operators, June 2018

[3] dr. William Webb, Spectrum Asymmetry, its Effects on Mobile Operators and Implications for the 5G Auction, June 2020

[4] See, for example, Ofcom, 2016, Award of the 2.3 and 3.4 GHz spectrum bands – Competition issues and auction regulations. RTR, 2017, Anhang 2 zur Konsultation zum Vergabeverfahren 3.4 – 3.8 GHz: Wettbewerbssichernde Massnahmen.

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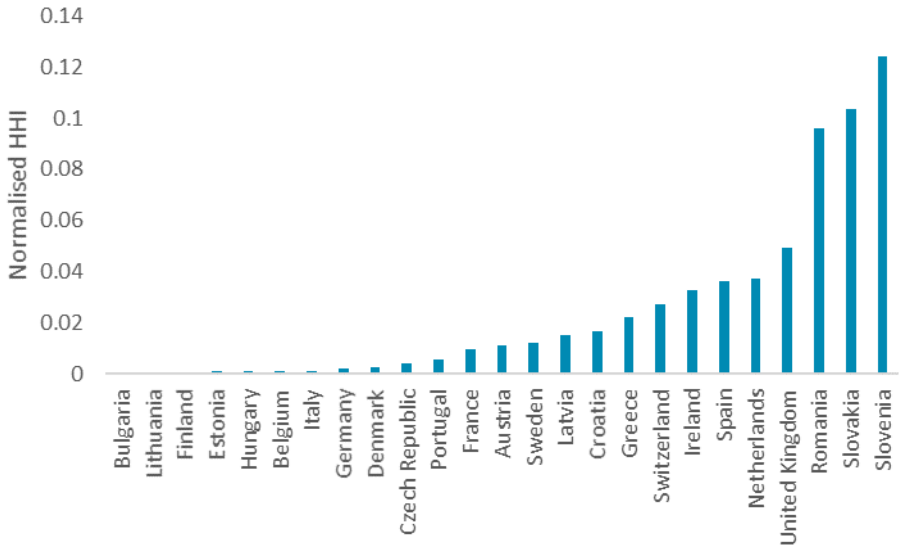
However, Telemach has now reached a point where its limited spectrum holdings compared to the other two operators hamper its ability to continue to pursue additional market share. Figure 2 plots the normalized Herfindahl-Hirschman index (HHI) of spectrum holdings for all European markets (using data we collected in mid-2018).[5] The normalised HHI is a commonly accepted measure of the equality of distribution. The figure highlights how asymmetric the spectrum distribution in Slovenia is compared to other European countries. Slovenia is a stark outlier with the most asymmetric holdings in the whole of Europe.

Figure 2: HHI of spectrum shares across Europe



Capacity is to a large extent determined by spectrum holdings. The economic literature shows that the presence of such capacity constraints in itself reduces incentives for price competition, regardless of whether individual competitors are already producing at full capacity.[6] Once near full capacity, MNOs have very little incentive to compete on price as it would not be able to serve the additional demand. On the other hand, when one MNO has sufficient capacity to serve its own customers as well as a significant share of those of a competitor, its spare capacity acts as a deterrent for its competitors to engage in a price war as they could lose significant market share and possibly their entire business.

[5] The HHI is a commonly accepted measure of market concentration. It is typically used in competition analysis, for example by the European Commission or US Department of Justice in merger analysis. A low HHI is considered an indication of a competitive market, while a higher HHI may indicate potential competition concerns.

[6] Olivier Compte, Frederic Jenny, Patrick Rey, 2003, Capacity Constraints, Mergers and Collusion, http://idei.fr/sites/default/files/medias/doc/by/rey/capacity_constraints.pdf

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The implication is that allowing large asymmetries in spectrum holdings to continue in Slovenia at a time when some networks are becoming congested is likely going to reduce price competition:

- As Dr Webb's report shows, Telemach will be the first MNO to experience network congestion and capacity shortages. Without access to significant amounts of additional spectrum, Telemach's incentive to compete on price to attract new customers would be much reduced as we would not have sufficient spare capacity to serve them.
- A1's significant spare capacity is a further deterrent for Telemach (and T-2) to engage in price competition, as retaliation from A1 could lead to significant losses in market share.

Dr Feldin argues that if Telemach ceases to be a viable competitor, the other two operators will likely increase their prices. This will lead to an increase of EUR 3 in postpaid ARPU and 1.50 in prepaid ARPU, leading to a EUR 3 increase in annual postpaid ARPU and EUR 1.50 in annual prepaid ARPU. This will make Slovenian consumers worse off. Dr Feldin estimates that in total this will lead to an annual loss in consumer surplus of EUR 34 million (roughly EUR 140 million over a 10-year period using a 3% discount rate).

We believe that this evidence should be a red flag to AKOS that extreme spectrum asymmetry, if allowed to persist, could have damaging repercussions for consumers and the economy at large. Fortunately, spectrum caps and reservations in the forthcoming auction can provide a remedy to this asymmetry, by ensuring at least three operators can secure a critical mass of every type of mobile spectrum. As we explain below, the caps that AKOS has already proposed are not strong enough to achieve this goal, but they are not far away. We propose some modest changes that, if implemented, will ensure a pro-competitive auction outcome and deliver long-term dividends for consumers through a more competitive mobile market place.

2.2. Spectrum caps

Spectrum caps are an essential aspect of this award. When so much mobile spectrum is available – 60% of the entire range of usable frequencies – the country cannot afford an inefficient allocation that cannot easily be corrected. The biggest risk is that too much spectrum is taken by the country's two largest operators, A1 and Telekom, and they use this advantage to create a barrier to competition from other operators, especially Telemach, given our success in eroding market share. We are not suggesting that A1 and Telekom will necessarily bid in an anti-competitive manner, but the motive exists, and the prudent response is for the regulator to adopt caps that foreclose any temptation.

When setting spectrum caps, AKOS needs to weigh two opposing risks:

1. If caps are too lax, it may facilitate anti-competitive bidding in the auction, leading to an inefficient allocation that is harmful to downstream competition; and

2. If caps are too tight, they may preclude the market from testing certain outcomes, typically involving larger incumbents winning more spectrum, that may be efficient.

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When assessing these risks in Slovenia, there are one of the factors that suggest that anti-competitive bidding is the greater risk and AKOS should lean towards tighter spectrum caps:

- **Starting position.** The operators enter the auction in very different positions. Two operators – Telekom and A1 – enjoy an historic advantage in network size, market share and existing spectrum holdings. Other bidders – including Telemach – are highly vulnerable to not securing a critical mass of spectrum.

In common with many European countries, Slovenia has a three-player mobile market, with a weak fourth player that could conceivably try to build its market share. Three-player competition, with Telemach as the challenger, has played a key role in bringing down prices and improving choice and quality of services for all Slovenians. AKOS should therefore set caps in a way that ensures that at least three operators can secure the critical mass of spectrum each needs to remain as full-service network operators. The caps should also allow for the possibility that a smaller fourth player emerges from the auction without unduly squeezing any one of the three network operators.

We think a good reference point for the upper bound at which spectrum caps should be set is the 37% threshold established by Ofcom in the UK. Ofcom has adopted this as a cap on total holdings of mobile spectrum in three successive auctions since 2013. Compared to many European countries, this may reasonably be characterized as a very lax cap. It would, for example, allow A1 and Telekom to acquire 74% of all mobile spectrum. However, this would still leave at least 26% of spectrum for other operators, which is enough that A1 and Telekom cannot together block a third operator from having critical mass. Caps any lower than this would open up a possibility that a third operator could fall below critical mass, especially if there is a fourth player which has a reservation and is competitive for some additional spectrum.

This 37% upper bound on caps should apply not just to all mobile spectrum but also to individual categories of spectrum that are critical to each mobile operator. At this time, we believe there are four relevant categories:

1. **Low band coverage (2x35 MHz):** These are bands that are essential to provide wide-area and good inbuilding service. Like AKOS, we include 700, 800 and 900 MHz FDD bands in this category but exclude 700 SDL and 1500 SDL for the time being, given less developed ecosystems and lack of uplink.

2. **Mid-band capacity (350 MHz):** This is spectrum that is essential for providing adequate 4G and 5G capacity in urban and suburban settings, so as to support rapid growth in data traffic. It includes both FDD and TDD spectrum at 1800, 2100[7], 2300, 2600 and 3500 MHz.

3. **Immediately usable 5G capacity (140 MHz):** The 380 MHz of 3500 MHz spectrum although part of the wider mid-band capacity category, also offers unique benefits that make it an essential resource for every MNO. It is the only band below 6 GHz that is currently available

[7] Excluding 2100 MHz TDD, as this is not usable spectrum due to lack of equipment eco system.

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that can support the larger blocks of up to 100 MHz needed for optimal 5G speed and capacity. No other bands have sufficient contiguous bandwidth to match what can be delivered using 3500 MHz.

4. **All usable mobile spectrum (450 MHz):** This should be a broader grouping including all mobile bands where the ecosystem is mature or in development. We propose the same grouping as AKOS with the addition of 700 SDL and 1500 SDL. We add these two bands because they are being allocated in many European countries and the supporting equipment ecosystem is likely to mature within the next 3-5 years.

We propose caps (2) and (3) as an alternative to AKOS's proposal for a combined cap on 2300 and 3500 MHz. We are concerned that AKOS's cap fails to take account of the huge combined advantage in that A1 and Telekom already have in capacity spectrum through holdings at 1800 MHz and 2600 MHz. Also. It introduces a risk that A1 and Telekom could attempt to monopolise the 3.5 GHz band, pushing other parties into 2.3 GHz, a band that has a good ecosystem but is not large enough to support blocks of 80-100 MHz preferred for optimal 5G deployment.

Each cap we are proposing is only modestly lower than those put forward by AKOS but they would hugely reduce the risk for smaller bidders, including ourselves, because they would largely remove the temptation for A1 and Telekom to bid in an anti-competitive manner. AKOS's caps could mean that as little as 19% of spectrum is acquired by challenger operators, which is not enough – especially with respect to capacity spectrum where A1 and Telekom already have a huge lead. Lifting this percentage above 25% is critical to de-risking the auction for challenger operators.

Importantly, the caps we propose would not preclude A1 and Telekom from acquiring a large portfolio of spectrum that meets the long-term needs of their customers. Were either operator to acquire 450 MHz of total mobile spectrum below 3800 MHz, they would remain amongst the most well-endowed operators in Europe. Given each already has 95 MHz at 2.6 GHz, they certainly do not need to acquire more than 140 MHz in the 3.5 GHz band.

Table 1 shows the approach to caps and outcomes of all awards of 3.4-3.8 GHz to date in Europe where at least 300 MHz has released for mobile use. We observe that five of the eight countries set caps at or below 140 MHz, and no operator in Europe has ever acquired more than 140 MHz.

Table 1: 3.4 - 3.8 GHz holdings by operator if country has released greater than 300 MHz for mobile use and spectrum caps (excluding the UK)

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Operator	Country	3.4-3.8 GHz holdings	Purchased to Spectrum cap?	Spectrum cap
A1 Telekom	Austria	100 to 140 MHz*	No	170 MHz (150 MHz for A1/T-Mobile)
T-Mobile (Magenta Telekom)		110 MHz	No	
Hutchison Drei		100 MHz	No	
DNA Plc	Finland	130 MHz	**Yes**	130 MHz
Elisa Corporation		130 MHz	**Yes**	
Telia Finland Oyj		130 MHz	**Yes**	
Telekom Deutschland	Germany	90 MHz	No	No cap
Vodafone DE		90 MHz	No	
Telefonica DE		70 MHz	No	
Drillisch Netz AG		50 MHz	No	
Telenor Hungary	Hungary	140 MHz	**Yes**	140 MHz
Telekom Hungary		120 MHz	No	
Vodafone Hungary		110 MHz	No	
Digi		20 MHz	No	
Three Ireland (Hutchison)	Ireland	100 MHz	No	150 MHz
Vodafone Ireland		85 to 105 MHz°	No	
Meteor Mobile		80 to 85 MHz+	No	
Post Luxembourg	Luxembourg	110 MHz	No	120 MHz
Orange Luxembourg		110 MHz	No	
Proximus Luxembourg (Tango)		100 MHz	No	
Luxembourg Online (LOL)		10 MHz	No	

Orange Espagne	Spain	100 MHz	No	120 MHz (Inclusive of all holdings between 3.4-3.6)
Telefónica Móviles España		90 MHz	No	
Vodafone España		90 MHz	No	
MásMóvil Ibercom		80 MHz	No	
Swisscom	Switzerland	120 MHz	**Yes**	120 MHz
Sunrise		100 MHz	No	
Salt		80 MHz	No	

Source: Regulator documents
Notes: The maximum holdings by country per MNO are highlighted red, and the minimum holdings are highlighted blue. Countries are excluded if 300 MHz or more of the 3.4 – 3.8 GHz band has not been allocated for mobile use (e.g. Italy, Czech Republic).
* A1 Telekom's holdings vary by region, from a maximum of 140 MHz (Vienna urban area) to 100 MHz (in Upper Austria, City of Salzburg, Province Salzburg, and Styria).
+ Meteor Mobile Communications Ltd holdings vary by region, from a maximum of 85 MHz in urban areas to 80 MHz in rural areas.
° Vodafone Ireland Ltd vary by region, from a maximum of 105 MHz in urban areas to 85 MHz in rural areas.

The caps we are proposing would apply only in the auction, so as to protect against asymmetric outcomes which are bad for competition. After the auctions, the caps may be relaxed, so as to allow operators to explore trading and spectrum sharing strategies, subject to competition screening as appropriate. This is another safeguard that should mitigate any concerns AKOS may have about tightening caps.

Action 1: AKOS should revise the spectrum caps so as to ensure at least three operators can win a critical mass of spectrum in every frequency group:

Low band coverage: 2x35 MHz across 700, 800 and 900 MHz FDD bands

Mid-band capacity: 350 MHz across 1800, 2100[8], 2300, 2600 & 3500 MHz bands

Immediately usable 5G capacity: 140 MHz in the 3500 MHz band

All usable spectrum: 450 MHz across all mobile spectrum bands including 700 & 1500 SDL

[8] Excluding 2100 MHz TDD, as this is not usable spectrum due to lack of equipment eco system.

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2.3. Reservation at 2100 MHz

The 2100 MHz band has a unique status in this award, as it is the only band where frequencies are being reclaimed and re-awarded. This spectrum is currently in use by all four operators, and failure of any operator to win at least some 2100 MHz spectrum could cause significant disruption to its network and to its customers.

AKOS proposes a de facto reservation tailored for T-2 of 2x10 MHz, equivalent to its existing holdings in the 2100 MHz band. Under this approach, if T-2 wins up to 2x10 MHz of 2100 MHz, its price is capped at the lower of the auction price and 170% of the reserve price. Therefore, provided that T-2 has a standalone valuation for the spectrum that meets the 170% threshold, it is de facto guaranteed to win this spectrum. Telemach does not necessarily object to spectrum being reserved for T-2 in this way, although we note that T-2 has a poor track record of investing in its mobile business and is not obviously deserving of such assistance.

We are concerned that no equivalent protection is being offered to Telemach, given that 2100 MHz is also an essential part of our network. One downside of reserving spectrum for a 4th operator in this way is that it means there is less spectrum available for the three main operators, and there is increased scope, at least in theory, for the two larger operators to attempt to squeeze Telemach out of an essential band.

There is a simple solution to this inconsistency: the 2x10 MHz reservation offer should be extended to all four incumbent operators. This would mean that we all have a guaranteed path to a critical mass of this spectrum necessary for network continuity, and can compete for additional spectrum in the auction. Should any operator not be willing to pay the price threshold, they could opt to stop bidding in the band, thereby freeing up the spectrum for others. This approach is also non-discriminatory.

We reserve judgement as to whether 170% of the reserve price is the right threshold for setting the maximum price payable for a bidder's first 2x10 MHz. This will obviously depend on the proposed level of reserve price for 2100 MHz.

Action 2: AKOS should offer a 2x10 MHz reservation at 2100 MHz to all four incumbent operators, so that all operators have some certainty regarding existing network continuity.

2.4. Minimum requirements

We strongly support the option for bidders to identify minimum requirements on a band-by-band basis, as a safeguard against the risk that a bidder might otherwise be stranded with a subset of its minimum demand. This is a prudent way to mitigate aggregation risk, and may improve the efficiency of the eSMRA auction format. It is a sensible alternative to using a package bid format, such as the CCA, which may be unduly complex and generate other concerns.

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When setting minimum requirements, there is a trade-off between:

- not providing sufficiently large options (# lots), so that bidders still face aggregation risk; and
- providing overly large options, which may be used strategically for gaming purposes, such as a bidder placing non-winnable bids that drive up prices in a band that they do not actually want to win, so as to weaken rivals.

We have carefully reviewed the options proposed for each band. In most cases, we think AKOS has identified the appropriate options. However, there are two bands where we think AKOS has been too generous, thereby unduly exposing the auction to gaming:

- **2300 MHz** – We fear that bidders that do not actually want 2300 MHz could adopt a 4 lot (40 MHz) minimum as a tactic to price drive. In particular, this would be enough to drive prices at modest risk if there was just one rival bidder attempting to secure 4 lots. We propose the minimum be reduced to 2 or 3 lots, which is sufficient to provide a 20-30 MHz carrier suitable for 4G or 5G.
- **3500 MHz** – We think the option to set a minimum 8 lot (80 MHz) minimum is much too high. While we agree that an 80-100 MHz block is optimal for 5G service, we believe the threshold to justify rolling out 5G in this band is much lower, no higher than 40 MHz. Indeed, many large MNOs in Europe, including Telefonica in Germany and BT and Vodafone in the UK – are launching 5G services with blocks smaller than 80 MHz. We are concerned that having too high a threshold invites gaming, perhaps by entrant operators seeking concessions in other bands. We propose that the largest minimum requirement option be set at 4 lots (40 MHz).

Action 3: AKOS should revise the minimum requirement options so as to reduce risk of gaming in the 2300 MHz and 3500 MHz bands:

At 2300 MHz: 1, 2 and 3 lot minimums only (eliminate 4 lot option)

At 3500 MHz: 1, 2, 3 and 4 lot minimums only (eliminate 5, 6, 7 and 8 lot options)

3. Auction Format

AKOS proposes to use the eSMRA format for the award. This is broadly in line with recent best practice for 5G auctions in Europe, and we support this choice of auction format.

In recent years, auction formats that combine key features of the Standard SMRA and the simple clock auction have emerged, often in response to criticism of the CCA. Several variants have been implemented, including the eSMRA, as proposed by AKOS, which has previously been used in Australia, Canada and the USA. Another closely related format is the hybrid clock-SMRA format that

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has been used for 5G auctions in the UK, Netherlands, Luxembourg and Austria, and proposed for 5G auctions in Slovakia and the UK.

The defining characteristics of the eSMRA and the hybrid clock-SMRA are that bidding and prices proceed much like a clock auction, but there are mechanisms for retaining demand by preventing demand falling below supply, thereby reducing the likelihood of lots going unsold. This type of format is relatively simple for participating bidders and produces a common clearing price per lot for each spectrum band, which is fair. Our impression is that the format is also less vulnerable to gaming than the CCA (where bidders can pay substantially different prices for the same spectrum, which – especially in multi-band settings – this may encourage strategic price setting bidding behaviour) .

Auction results have borne out these assessments: the type of format proposed by AKOS has a solid track record, with competitive awards and sensible price outcomes; and, unlike the CCA, there have been no instances of peculiarly high or asymmetric price outcomes. We note, in particular, that the format has been used repeatedly by the FCC in the United States, as a replacement for the standard SMRA, and also adopted in Australia and Canada, to replace the CCA.

While we support AKOS's choice of auction format, we do not support its proposed rules on information policy where the precise level of excess demand in a category is only announced for excess demand greater than 2 lots. Rules that limit information may introduce an asymmetry between bidders that is not helpful for achieving an efficient outcome. For example, if excess demand in a category is 3 lots, and a bidder reduces demand by 2 lots, this bidder will know that excess demand is 1 lot or less, while all competing bidders will only know excess demand is 2 lots or less. We recognise AKOS's motive for such limitations on information (presumably an attempt to limit tacit demand reduction), but our concern is that in practice such rules only serve to create inefficient information asymmetries.

For the same reason, we do not support AKOS's proposal for special rules for categories E and F where information is bidder specific and depends on the selected Minimum Viable Quantity. Presumably these have been proposed to address the concerns we highlighted above regarding potential price driving tactics in the 2300 MHz and 3500 MHz bands by bidders who do not really want to win the spectrum but are seeking concessions elsewhere. As proposed above, we think the way to address this is to reduce the maximum minimum requirements, not to introduce further asymmetries in demand information.

Action 4: AKOS should revisit the information rule (taking into account proposed changes to the minimum requirements at 2300 and 3500 MHz), so as to ensure all bidders have access to the same information in each round.

Finally, we ask AKOS to clarify the rule specified in Section F2.6.3 (47), which states:

> "*For a bid in a Lot Category other than Lot Category G, the change in demand may be a positive number (to indicate an increase in demand) or a negative number (to indicate a decrease). In*

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the case of a decrease, the bidder must also specify whether the bid is a Switch Bid or an Exit Bid."

This rule seems to suggest that a decrease in demand must be either a Switch Bid or an Exit Bid. It is quite possible that a bidder may want to decrease demand in one category, and increase demand in another category, while decreasing the overall level of activity. In this case the decrease in demand is partly a Switch bid and partly an Exit bid. We seek clarification on how AKOS intend to address cases like this.

Action 5: AKOS should clarify its approach to "Switch Bids" and "Exit Bids".

4. Reserve prices, payment terms and deposits

Given the huge volume of spectrum being released in this auction, acquiring new spectrum and re-acquiring existing spectrum will impose a significant burden on Slovenian MNOs, just at a time when we must increase our investments to improve 4G networks and launch 5G services. Reserve prices and payment terms should be established that ensure spectrum is sold and deployed, and that operators can manage the financial burden.

4.1. Reserve prices

With respect to reserve prices, we recommend that:

1. **Reserve price should be set at a level that is well below the estimated market value.** Setting reserve prices below or at least no higher than a conservative estimate of market value should ensure that spectrum is allocated and that there is scope for price discovery in the auction that assists bidders in identifying the true market value of the spectrum. Given the large volume of spectrum available, there is a non-trivial risk that if reserve prices are set too high, operators will economize on spectrum, leading to spectrum going unsold or being allocated inefficiently.

2. **Annual fees must be factored into the reserve price.** Annual fees are an integral part of the cost of spectrum to any MNO. The structure of annual fees varies significantly across Europe. In Slovenia, annual fees amount to several hundred thousand Euros each year, which is a non-trivial cost. When benchmarking reserve prices against other countries, annual fees must be factored into the comparison.

3. **Licence obligations should be factored into the reserve price.** We welcome AKOS's decision to associate meaningful but achievable coverage obligations with the 700 MHz licences, with adjustments to reflect the starting positions of the operators. To the extent these require operators to make new investments beyond what they were already planning, the cost must be taken into account in reserve prices. Most obviously this can be done by factoring the estimated non-commercial costs of fulfilling the licences into a reduced reserve price.

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We look forward to the opportunity to comment on AKOS's proposed reserve prices and its methodology for determining these levels, when they are ready.

Action 6: AKOS should consult on the level of reserve prices and its methodology for setting them.

4.2. 2100 MHz – delayed availability lot

Telemach has a 2x5 MHz licence that expires in 2023, two years after the start date of the other licences available in the auction. Rather than sell this lot as a separate category, AKOS proposes that it be sold as a standard 15-year licence, with special rules to determine assignment to one of the winning bidders. Specifically, the licence will be assigned to Telemach provided we win some 2100 MHz spectrum, or otherwise to a winner of a larger 2100 MHz block.

We support the proposed allocation / assignment rule in principle, provided that the price is adjusted to take into account the lower value of the licence. Assigning the delayed start licence to Telemach will provide continuity and make it easier to replan the band to ensure all winning bidders have contiguous spectrum. However, AKOS must recognise that a licence that only lasts for 13 years and starts 2 years in the future cannot have the same value or price as a 15-year licence available immediately.

We urge AKOS to offer a rebate to the winner of the shorter licence that takes into account the foregone value of the licence over the first two years, in the form of a % price discount off the auction price for a full 15-year licence. The rebate should take into account both the reduced duration and the delayed start. A simple pro rata adjustment based on licence term would not account sufficiently for the lost value, given that the value of a licence in today's money is necessarily higher in the early years. Accordingly, AKOS should use a net present value (NPV) adjustment.

We propose that AKOS adopt the following simple formula based on NPV to determine the size of the price discount:

$$Discount = 1 - \frac{\sum_{i=2}^{14} \frac{1}{(1+r)^i}}{\sum_{i=0}^{14} \frac{1}{(1+r)^i}}$$

where r is the weighted cost of capital (WACC).

The following table provides example calculations for different WACCs. We propose a WACC of between 7% and 8%, being representative of the cost of capital faced by a mobile operator in Slovenia. This would imply a discount of between 20.8% and 21.8% for block BD07, so as to compensate for the lost value of not receiving new spectrum in the first two years.

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Table 2: Percentage price discount for reduced licence term and delayed start for block BD07

WACC	Price discount to be applied to block BD07
5%	17.9%
6%	18.9%
7%	19.9%
8%	20.8%
9%	21.8%
10%	22.8%

For avoidance of doubt, the conditions under which we were awarded our current licence are irrelevant to this necessary adjustment. If AKOS proceeded without making this price adjustment, this should lead to a reduction in the value that all bidders are willing to bid for 2100 MHz given the risk they could end up with the delayed start lot. Telemach would be particularly disadvantaged in competing for 2.1 GHz spectrum, because we are particularly likely to be assigned this lot.

Action 7: AKOS should offer a price discount to the bidder that wins the shorter duration 2100 MHz lot, reflecting the reduced value of the licence.

4.3. Payment terms

In this auction, operators will be required to spend large sums of capital, and this may put pressure on their ability to invest in their networks. Even if reserve prices are modest and competition in the auction limited, the financial burden on operators of buying so much spectrum will be large.

To lessen the burden on operators, we suggest AKOS consider two approaches:

1. **Pay for spectrum when it is usable.** The proposed timetable involves awarding some spectrum before it is usable, including 700 MHz (available 2022). As a general principle, it is fair to defer payment until spectrum is usable. This approach was used, for example, in Germany, for the recent early re-award of some 2100 MHz spectrum. Operators may be still be asked to provide down payments or bank guarantees, so as to deter default.

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2. **Allow operators to spread payments over the licence terms.** Many countries in Europe offer payment terms to ease the upfront financial burdens on operators when acquiring spectrum. Examples include:

   - **Denmark:** Danish regulator, DEA, typically allows MNOs to pay upfront spectrum fees over a number of years. In Denmark's 2019 auction for 700 MHz, 900 MHz, and 2300 MHz, bidders were given the option to pay the licence fee up front or pay 10% upfront and pay the remaining 90% in eight equal, annual instalments.[9]

   - **France:** French regulator, ARCEP, delayed the payment for 700 MHz spectrum awarded in 2015 until the band was cleared of DTT services and the licences were issued to winning bidders. In addition, the payment was to be made in four equal annual instalments starting from issuing the licence.[10]

   - **Italy:** For the 2018 auction of 700 MHz, 3.6-3.8 GHz, and 26 GHz, Italy included a rule that allowed for the payment of spectrum to be deferred over multiple years if the aggregate bid level reached a level that was significantly above reserve. The total auction revenues reached this level and the winning bidders were given the option to defer payments.[11]

We recommend that AKOS study these examples and consult with the industry on their preferred payment profiles. Our suggested approach is for AKOS to require operators to pay 50% of the fees upfront and allow them to pay the remainder in annual instalments spread over the 15-year licence term.

Action 8: AKOS should adopt more investment-friendly payment terms, such as requiring 50% of fees be paid upfront with the remainder paid in annual instalments over the licence term.

4.4. Deposits

We support AKOS's proposal to set deposits at a substantial level, so as to deter insincere parties from participating and protect the state against the risk of default. The deposit rules require bidders to cover 100% of the value of their initial offer for spectrum at the (as yet unspecified) reserve prices. This approach is acceptable assuming that reserve prices are set modestly, i.e. well below the expected market value. We recommend that AKOS request that bidders submit deposits in the form of a bank guarantee, backed by a bank with not lower rating than "BBB-" rating of Standard & Poor's or Fitch or not lower than "Baa3" of Moody's. The ability to secure funding from a quality bank is an important

[9] DEA, section 8.1.1, *Information Memorandum: 700 MHz, 900 MHz and 2300 MHz (English Version)*.
[10] https://archives.arcep.fr/uploads/tx_gsavis/15-1569.pdf
[11] *Article 1045, of the law 27 December 2017, n. 205* stipulated that if the total of the 3.6 GHz band exceeded EUR 1.25bn then the remaining fees would be paid over a tiered fee structure.

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signal of financial resilience, providing the state with extra confidence that bidders will not default on their obligations.

Given that AKOS is proposing a large upfront deposit, we recommend it relaxes the requirement that bidders have to top up their deposit whenever the value of their bids raises above 50% of their deposits. This seems unnecessarily onerous given the substantial sums that bidders will have committed upfront, and we are concerned that deposit calls could be disruptive to the bidding process. A simple solution is for AKOS to grant itself discretion whether to exercise a deposit call, so it can exercise one if it gets concerned about default or otherwise proceed without this, if it is comfortable that all bids are sincere. We also propose extending the deadline for deposit top ups from 24 hours to 2 full business days, so as to reduce any risk that problems with accessing banking services cause bidders to miss the top up deadline. In current circumstances where banks may not be working at full capacity, owing to the COVID19 pandemic, there could be a risk of delay in essential deposit transfers.

Action 9: AKOS should require the deposit to be in the form of a bank guarantee from a bank rated not less than "BBB-" rating of Standard & Poor's or Fitch or not lower than "Baa3" of Moody's . It should grant itself discretion whether to enforce the requirement for bidders to top up their bids so that the bidding process is not disrupted unnecessarily.

5. Licence duration and the new Communications Act

Some respondents to this consultation may argue that the award should be delayed until after the new Electronic Communications Act sis adopted, so as to enable prolongation of the existing frequencies and extension the validity of the new licences to 20 years. We disagree. Slovenia cannot wait. Slovenians need 5G now, and to deliver 5G, the MNOs need new frequencies, in particular, we need 700 MHz and 3500 MHz spectrum. The Telemach network needs more capacity, both in urban and rural areas, and this can only be delivered through access to new spectrum bands. Other operators, who lack ambition or have the luxury of large exiting holdings of mobile spectrum, may prefer to wait but their narrow self-interest in not aligned with the national interest.

The entire industry agrees that longer licence terms are needed. A licence duration of 15 years is the bare minimum to provide incentives for investment in the associated frequencies. It is long enough to support a business case for immediate deployment of frequencies to upgrade existing 4G networks and launch new 5G services. However, in 5-10 years-time, as licensees face decision on upgrading 5G networks and start to think about 6G, uncertainty over licence prolongation could undermine the business case for on-going investment.

A change to 20-year licences would be an improvement, but only defers the 'cliff-edge' investment challenge associated with hard expiry dates. What operators really need is more certainty that they can secure long-term access to a critical mass of spectrum on a 'rolling' basis. Certainty will be particularly important in Slovenia, given the clustering of spectrum expiry dates in just two years: about 40% of sub-4 GHz spectrum in 2031 and the remaining 60% in 2036. More fundamental change is

needed than simply extending the term of existing and new licences. This is a debate we need to have in Slovenia but it is not one we should try to rush through at the same time as AKOS implements its largest ever spectrum auction.

In short, we fully support AKOS's decision to prioritise the award of new spectrum ahead of implementing changes to communications regulation. AKOS should first put spectrum in the market place, and then use the post-auction 'breathing space' afforded by MNOs having healthy long-term, spectrum portfolios to debate and make good decisions on future management of mobile spectrum licences. AKOS can help facilitate this process now by making clear the scope of reforms that will be on the table, including potential prolongation of licence duration beyond 15 years and greater certainty for operators regarding licence renewal at fair prices.

6. Coverage obligations and network sharing rules

We welcome AKOS's decision to associate meaningful but achievable coverage obligations with the 700 MHz licences, with adjustments to reflect the starting positions of the operators. On the other hand we notice that all coverage requirements are concentrated in the cities, with near-total disregard for the rural part of Slovenia, despite the core radio-frequency management principles from Article 25 of the ECA inter alia call for social and cultural criteria to be considered – and which would be defeated in case if opportunistic speculation would create artificial spectrum shortage to the MNOs. We propose that the Agency amends point A.6.4.2.1 so that realistic 75% territorial coverage in 5 years from the award for the entire spectrum holding is used a yardstick for the commitment of a MNO.

6.1. Network sharing

The construction of 5G networks will be a special challenge for operators, especially in terms of proper placement of new base stations in space and achieving appropriate levels of electromagnetic radiation. After reviewing the Information Memorandum, we find that the Agency did not take into sufficient account the technological possibilities offered by 5G technology nor the benefits identified by BEREC in its report on infrastructure sharing[12], namely (i) cost reduction, (ii) improved radio spectrum efficiency and reducing administrative costs, (iii) improving end-user choice; and (iv) benefits as dictated by the public interest. Implicit prohibition of the sharing of active parts of the network in most of the country constitutes a regulatory measure that should be justified by following Article 208 of the Electronic Communications Act ("ECA") and producing a counterfactual analysis as envisioned by the Common Position (CP2) of the BEREC Common Position[13], weighing the possible negative consequences of the infrastructure sharing against the positive effects by considering the CP3 – outlined parameters for assessment, i.e. the market shares, the possible number of operators involved, the technologies, the geographic scope and the time frame. We argue that any ex ante regulatory measure – particularly one

[12] BEREC Report on infrastructure sharing BoR (18) 116, 14 June 2018 (»BEREC Report«)
[13] BEREC Common Position on Mobile Infrastructure Sharing BoR (19) 110, 13 June 2019 (»BEREC Common Position«)

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at odds with the demonstrable positive effects[14] of its absence should be comprehensively assessed and carefully implemented not only with a view of how it may impact the auction mechanics and the possibility of maximising the price but should be assessed with a view of satisfying the regulatory principles from Article 198 of the ECA. Furthermore, any joint use agreement would be subject to a competitive legal assessment under Article 101 of the Treaty on the Functioning of the European Union and would thus ensure the protection of competition.

The general – and functional exclusion of the possibility of voluntary joint use, except in special circumstances and with 26 GHz, furthermore does not take into account the specificities of the 5G as a qualitative change in the role of network operators in relation to service providers and end users. In their response to the BEREC public consultation on infrastructure sharing, the GSMA and ETNO emphasize the virtualization of network infrastructure, which enables differentiation between operators regardless of possible common active equipment with competition expected with services outside the core and access networks, which means that already from a technical point of view, any arguments against sharing that may have been valid in older generations of mobile networks no longer apply to the extent valid with such older technologies.

Slovenia is a small, geographically diverse country with three developed and one semi-stagnant mobile network, which would each have to densify and upgrade its infrastructure on a level that will be technically, organizationally and financially an order of magnitude more demanding comparing with the upgrades in the previous generations, including the LTE. Synergy savings in CAPEX due to active-sharing are particularly relevant in smaller countries like Slovenia since operators in smaller countries can exploit scale economies to a lesser extent than operators in larger countries, hence sharing could compensate for this disadvantage. Tripling (or quadrupling) the infrastructure practically across the whole territory would be inefficient and would slow the 5G adoption, contribute to the additional EM radiation beyond what would be necessary if some of the operators decided to cooperate with the rollout.

Considering the above we believe that active sharing – including multi-frequency sharing should not be implicitly prohibited and propose that as a minimum, chapter A. 6.5.1 is supplemented with the active sharing allowed outside of the two biggest cities where MNOs with certain achieved spectrum floor to prevent anti-competitive bidding (for example 200 MHz), could realize the synergies between their respective networks for faster deployment and bigger coverage.

6.2. Vendor selection criteria

In the point A7 of the Information Memorandum the Agency expands the requirements already included in the Article 13.a of Directive 2009/140/EC and transposed in the Chapter VII of the Electronic Communications Act by introducing additional criteria for vendor selection in the auction and

[14] Point 4.3. of the BEREC Report found positive experiences in Austria, Bulgaria, Croatia, Denmark, France, Greece, Montenegro, Norway, Poland, Romania, Spain, Sweden, Switzerland and Turkey

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(potentially) in the award decision, without referring to the specific laws, regulations or standards for doing so.

Such inclusion, where the requirements are not precise enough to be actionable in a manner that an operator could reasonably evaluate the potential consequences of its auction-related measures and later investment decisions creates a legal and investment uncertainty by omitting the relevant information by which auction and investment decisions could be made.

Inclusion of additional uncertainty into what is already an auction for what is an essential facility, presents a significant discouragement to the operators who have to plan their ROI for the spectrum investment over at least a 15-year period and where the formal status of the included point is not clear as it relates to the period after the assignment. We note that later concretization of the now vague requirements in a formal spectrum award as an administrative act may create an unusual situation where an operator will win the frequencies but will have to file an administrative dispute over its own spectrum award because of as-yet unknown requirements adopted on the basis of the said paragraph.

We would therefore suggest that this section is removed from the Information Memorandum or, alternatively, drafted in a way that its legal significance be made clear.

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