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The Danish Telecom Industry Association's response to the RSPG public consultation on RSPP, spectrum sharing, and additional spectrum needs

Teleindustrien in Denmark (The Danish Telecom Industry Association, "TI" in the following) have received RSPG's draft documents with relation to the future of the RSPG programme and thus the coming years' European Spectrum administration and appreciate the opportunity to comment and provide the following consolidated input.

Firstly, TI is happy to note that the principle of technology neutrality is key for providing mobile services efficiently. It enables MNOs to re-farm new technologies in the bands when and where it best serves customer needs. Thus, we are happy to note that RSPG recognizes that any deviation from this principle must be carefully analyzed.

Secondly, TI notes that the draft Radio Spectrum Policy Programme, to a very large extend, focuses on spectrum sharing. TI appreciates RSPG's intend that valuable spectrum should be used as effectively as possible and there may well be further possibilities for spectrum sharing. However, it is important to note that sharing should not be a goal in itself, rather a means to achieve more efficient spectrum usage if justified and properly assessed.

It is the belief of TI that the ambition to increase spectrum sharing should not lead to unnecessary regulation. Market based approaches in Denmark and elsewhere are working and have proven to be extremely successful and policy makers should only intervene where there is proven market failure.

Exclusively licensed spectrum has until now proven to be the necessary cornerstone for building high quality, nationwide mobile and broadband networks available at reasonable prices to all parts of the European societies. Exclusive licenses provide the necessary certainty

when it comes to spectrum access and the considerable investments needed in order to establish wide area networks.

Thus, exclusive licenses should remain the main method for assigning spectrum for MNOs although spectrum sharing can play a complementary role if carefully designed well in advance, including consultations with all potential spectrum users in order to avoid undermining the future of 5G.

In general, MNOs use spectrum very efficiently and sharing is extensively used in practice. In Denmark, Telia and Telenor have pooled their collected spectrum resources, a number of MVNO and network sharing agreements are in place, new and more spectrum efficient technologies are constantly employed, and services are provided to a number of vertical uses.

However, sharing can also reduce predictability for MNOs, hampering the provision of high-quality mobile services needed by society. For instance, a potential "use it or share it" approach, as mentioned by RSPG, may reserve the spectrum to a secondary user, and prevent MNOs from using the spectrum in a specific area when demand appears.

Therefore, TI applaud and prefer voluntary sharing on commercial terms – already a possibility in the Danish Spectrum Act – where the spectrum owner can assess if sharing can be done without affecting efficient use of the spectrum. If further spectrum sharing is considered to be a political goal, it should be considered how to incentivize spectrum sharing for example via reduced spectrum fees.

If local spectrum needs are identified, TI is not in favor of reserving spectrum for local licenses in the spectrum bands that are internationally harmonized for IMT. Instead, other spectrum bands should be considered, for instance legacy bands with service specific licenses where other uses are constrained. In such cases spectrum sharing can be valuable instrument in securing transition to a more efficient use.

In any case, if regulators decide to set-aside spectrum for local licensing, this needs to be clearly and objectively justified and should not lead to increased spectrum scarcity and irreversible fragmentation. Also, TI finds that increased guidance on competition considerations regarding spectrum sharing, hence network sharing, is needed at EU-level to ensure level-playing-field among all actors across Member States and clear incentives to foster sharing locally.
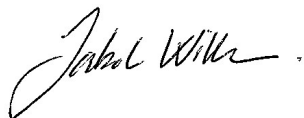
Finally, we note that the RSPG's proposals to increase and incentivize spectrum sharing is primarily based on software-based methods. We find that software cannot be made 100 pct. secure considering vulnerabilities of outside attacks and regarding suppliers' software updates. We note that in principle a mechanism for spectrum sharing can be used to create disturbances – and ultimately sabotage – within critical communications infrastructure. In the case where the spectrum administration would not allow for spectrum sharing, it would

not necessarily remove the risk of exploitation, if there exists equip-ment (in significant numbers) within the legal jurisdiction with build-in features that support spectrum sharing. Thus, we find that the princi-ple for developing systems relevant for spectrum sharing should be "security by design", implying that in worst-case scenarios, i.e. com-promised mechanisms to spectrum sharing, it should be possible to return to primary situation of spectrum usage without any delay and in a non-destructive way.

When it comes to the spectrum needs of the future, including the support for IMT, TI support the views of ETNO and GSMA:

- **Sub 1 GHz:** The UHF 470-960 MHz band is on the agenda for the upcoming WRC-23 conference. Low band spectrum is key for future mobile services coverage, not just due to its cover-age capacities, but also for its 5G-ready capabilities.

- **Mid band:** Additional spectrum in mid-bands will be required to address 5G consumer take up and usage. The RSPP and spec-trum needs opinion should plan for exploring how to meet this growing demand from citizens. For example, 3.8-4.2 GHz, and 6 GHz may offer the potential of meeting the urban coverage and capacity demands. Spectrum awards should follow the pro-cess of ETSI-CEPT collaboration, starting from the definition of the requirements, followed by a fair assessment of the different options including by accessing coexistence between the differ-ent systems and services.

- **High bands**: High bands are needed to meet the ultra-high broadband speeds envisioned for 5G. Spectrum in 26 GHz and 40 GHz bands are expected to address this demand, provided that sufficiently large contiguous blocks with reasonable condi-tions are awarded with exclusive licenses. Other bands, such as 28 GHz, 40 GHz, 50 GHz and 66-71 GHz may also help to ad-dress some demands.

Best regards

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