Questions & Answers

Planning for the World Radiocommunication Conference 2015 (WRC-15)

An interview with Jonas Wessel, Director, Spectrum Department, the Swedish Post and Telecom Authority
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The World Radiocommiunication Conference in Geneva in November 2015 will provide a rare opportunity for governments from around the world to agree new international spectrum allocations for the mobile service. Sweden has consistently been at the forefront of mobile broadband, it was the first country to commercially launch 4G, and is an active participant in current WRC-15 discussions.

1. **How important is identifying more spectrum for mobile broadband at WRC-15 for Sweden?**
   We believe that the development of high speed, high capacity mobile services, is extremely important to the consumers in Sweden and the rest of Europe.

   The development of these services will have a profound impact on many areas of society and amongst other things strengthening the competitiveness of Europe on a global scale. Hence, the availability of spectrum for such services is of fundamental importance.

2. **Why is that?**
   In Sweden, mobile services are well developed and there is a continuous and increasing demand from users for high capacity services. Not least since Sweden is a sparsely populated country, mobile broadband has, in many parts of the country, become a cost-efficient means of providing internet access to consumers.

   As the processes within the ITU-R are slow, with conferences being held every third or fourth year, we as an administration think that it is important to be prepared for future requirements. As a minimum, we need to make sure that there are mobile allocations available, so that harmonisation for mobile broadband can be made as demands develop. We also believe that changes in the way people use and share information will require changes in how spectrum is used.

3. **Do you think the spectrum needs for the Internet of Things (IoT) can and should be addressed at the ITU level?**
   We don't believe that there is any need to identify spectrum for IoT in the ITU Radio Regulations (RR). However, there could be ITU reports and recommendations developed to address the needs of IoT.

4. **What would you say to other regulators to ensure consensus on mobile broadband allocations throughout Europe, ITU Region 1, and at a global level?**
   It is necessary to consider the long planning cycles related to making changes in the ITU-RR. To provide for flexibility we believe that it is important to address the future needs of mobile broadband, by introducing allocations on a regional or, preferably, worldwide basis. However, it is important to keep in mind that the actual use of a frequency band is decided on national level. An allocation does not mean that a frequency will be used for that specific service in a country; it only provides an opportunity to use the frequencies. Each Member state needs to decide on the use of a frequency band based on the user requirements.

5. **Sweden was one of the first countries in Europe to make a political decision to assign the 700 MHz band for mobile broadband. Why were you so keen to make that decision?**
   The decision made by the Swedish Government was really one on broadcasting, i.e. the next period for broadcasting networks. The political decision on broadcasting is not within the remit of the PTS.

6. **Would Sweden consider supporting a co-primary allocation in the 470-694 MHz band?**
   The question of a co-primary allocation to the mobile service in this frequency range is still under investigation in Sweden. Hence we cannot at this stage give any additional information on this topic.

7. **Why are you in favour of an IMT identification in 2.7-2.9 GHz at WRC-15?**
   We are of the impression that the current usage of this band is low in many countries. Therefore, there is potential for using the band more efficiently. For example, in Sweden there is only one radar system installed. Furthermore the frequency range is interesting because of its closeness to the 2.6 GHz frequency range, which has already been harmonised for IMT.

8. **How do you think the 2.7-2.9 GHz band can be made available and existing users accommodated?**
   We believe that there is potential for either sharing or segmentation of usage in this band. Studies performed by Sweden have shown that, for adjacent channel operation, sharing is possible and separation distances can be very small if proper mitigation techniques are employed. Segmentation could also be another possibility. One option that could be explored is to move current radar systems to the frequency band above 2.9 GHz.

9. **There is opposition to the 2.7-2.9 GHz band from other regulators in Europe, how do you think agreement can be reached on providing spectrum for aeronautical radar while supporting mobile broadband?**
   As a first step, we think that an allocation for mobile services in this band should be introduced, making it possible to introduce mobile services as demand develops. We think it is important to respect the national sovereignty when deciding on the use of frequencies. However, we also need to make it possible for countries wishing to develop mobile services in the band, on a broader basis, to have this option.

10. **How important is supporting flexibility for regulators so countries with minimal use of a band don't get locked out by countries which use it more heavily?**
    We believe that flexible regulation is a key issue in the process of introducing new services. Having additional allocations and potentially even IMT identifications provides the necessary means for countries to freely decide on the use of the band.

11. **Seeing as the majority of European administrations can use the C-band for mobile broadband under current arrangements, why are you in favour of a C-band allocation?**
    As in the case of the 2700-2900 MHz frequency band, we think that there is little actual use of C-band, 3400-4200 MHz for satellite communication in Europe. Fortunately, there seems to be a common European position regarding the frequency ranges 3400-3600 MHz and 3600-3800 MHz. However, we think that also the range 3800-4200 MHz should be considered. The band can be used much more efficiently by also addressing the mobile services. C-band is predominantly used for satellite communication in regions with high rain attenuation, typically in tropical areas, which is not the case in Europe, where satellite communication using Ku- or Ka-bands are preferred.

    The band 3800-4200 MHz represents a large span of contiguous spectrum. It offers a big opportunity to use very wide channel bandwidths to support IMT-Advanced systems enabling high data rates.

12. **How do you think the C-band can be made available and existing users accommodated?**
    Generally, it is of course up to each country to decide on how to use frequency bands. Countries with little use of the band 3800-4200 MHz for satellite communication may decide to introduce mobile services. Other countries may decide to continue using it for satellite services. It should be noted that this band is already allocated to mobile (except aeronautical mobile) on a co-primary basis in Regions 2 and 3 and to mobile service on a secondary basis in Region 1.

    We strongly believe that, with proper planning and employment of mitigation techniques, sharing between FSS and IMT in the same geographical area may be possible.

13. **Of the 800MHz band in the C-band, how much of the C-band spectrum should be retained for exclusive use by the satellite industry, if any?**
    As mentioned earlier, we see that this frequency range has a low degree of utilization in many parts of Europe including Sweden. We don't see the need for any exclusivity. National requirements will determine how much spectrum would need to be retained for satellite services. With proper planning it may be possible to share spectrum by geographical separation. However, regional harmonization may also impact the future use of the band.

14. **There seems to be good support in Europe for C-band, are you confident a wider identification will be agreed?**
    If you mean good support to the ranges below 3800 MHz we agree. However, for the range 3800-4200 MHz

it is not that simple. We have seen quite a lot of support for further studies of the band. This issue has recently been addressed in RSCOM[1]. However, Sweden would like to move faster on this issue. We think it would be in the interests of Europe to at least have the same flexibility as regions 2 and 3 have, allowing for a primary mobile allocation. Sweden doesn't want to force other countries to use the band in one way or another. We simply believe that the nature of a potential harmonisation of the band within Europe will have only a slight impact on the European satellite communications industry – considering that C-band is predominantly used in areas with high rain attenuation.

15. Why are you in favour of a mobile broadband identification in the L-band at WRC-15?

Part of the band (1452-1492 MHz) has already been harmonised for MFCN SDL[2] within Europe. We think that studies undertaken in the L-band confirm that it would be possible to extend the frequency range to 1427-1518 MHz, allowing for a larger range of contiguous spectrum for MFCN services.

16. How do you think the L-band can be made available and existing users accommodated?

As always when talking about re-farming frequency bands, process may be lengthy and difficult in many countries. The situation probably varies between different countries. The important issue is to make it possible and provide the foundation for introducing the changes. If harmonised is important to allow for a sufficient transition period. Countries need to develop strategies for how to address existing services and to investigate alternatives, e.g. alternative frequency bands, sharing possibilities and so on. But, this is a problem that we will always experience when making changes to frequency bands. If we are not prepared to make such changes we will have a very static situation, making it difficult to adapt to developments that influences how we communicate - not only technical but also social and cultural changes in our everyday life. If it never is possible to make changes to incumbent services, development will be difficult.

17. There seems to be reasonable support in Europe for the higher part of L-band but you also support the lower part (1350-1400 MHz), why is that?

The 1350-1400 MHz frequency band is already allocated to mobile services on a primary basis. This is a good basis for considering the band for future IMT services. Presently, we think it is relevant to discuss the band for identification, so that it continues to be considered in the WRC process. However, Sweden has also indicated that we can accept the trade-off between the lower part and the upper part in the band 1492-1518 MHz. For us, it is important to consider the whole range between 1427-1518 MHz as one package.

18. What do you think is the potential importance of part of the L-band for global harmonisation?

Despite the fact that terminals are becoming more and more advanced, and are supporting more frequency bands, global harmonization is important to benefit from economies of scale.

The L-band has particular advantages due to its propagation characteristics. It represents a good complement to frequency bands already available.

As a result of changes in user behaviour, we also see a trend towards more asymmetric traffic in mobile networks. Thus, the possibility to address this issue by introducing SDL in the L-band would be beneficial.

19. How far has Sweden gone to define spectrum needs for 5G networks, particularly in frequencies higher than 6 GHz that could be allocated to IMT at WRC-18/19, or technically at WRC-15?

Sweden has suggested an agenda item for the WRC-18/19, to address frequencies higher than 6 GHz for 5G networks. The details are yet to be finalized, and Sweden is actively participating in the work within the CEPT to develop a common European position. The long term requirements for mobile broadband need to be taken into account as well as the issue of competition, allowing for several operators have access to spectrum for high capacity services.

1 RSCOM: The European Commission's "Radio Spectrum Committee"

2 MFCN SDL: Mobile/Fixed Communications Networks Supplemental Downlink (e.g. it can be used for mobile broadband downlinks)



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