SCF response to the draft RSPG Opinion

RSPG23-026 FINAL

The development of 6G and possible implications for spectrum needs and guidance on the rollout of future wireless broadband networks

About the SCF

SCF[1] is a global organization whose mission is to enable and accelerate the sustainable digital transformation of industry, enterprises and communities. We do this by supporting a range of agile, cost-effective, scalable, cellular infrastructure and solutions **for established and emerging service providers and deployers**.

We gather requirements from service providers and businesses and, directed by our Board, these inputs shape our work program. Our **specifications, technical papers and enterprise-focused outputs** are made freely available to benefit the wider industry.

Today our members are working on projects spanning split architectures, private networks, neutral host requirements and business model evolution, 5G small cell products, and **policy and regulation**.

Introduction

SCF welcomes the opportunity to comment on the draft RSPG Opinion on the development of 6G and possible implications for spectrum needs and guidance on the rollout of future wireless broadband networks.

SCF's history and charter encompass Small Cells (starting from Femtocells), covering various aspects of core technologies (components and products), standards, network architectures, deployments (best practices and blueprints) and regulatory considerations. SCF has pioneered and contributed to all generations of the cellular technologies, starting from 3G to 5G and is well positioned to contribute our collective vision towards the development of 6G.

One of the distinguishing aspects of SCF has been to provide a home for emerging ecosystem. Starting with being a home for emerging component (chipset) and products (OEMs) vendors for Femtocells in the early years of the Forum, we now recognize and are creating a home for emerging deployers, namely Neutral Hosts and Enterprises for building shared infrastructure and private cellular networks respectively. Accordingly, in this paper, we focus on and contribute our views on the 6G requirements from a Neutral Host perspective and do not purposefully address the broader ecosystem.

What is a neutral host?

A neutral host is a company that invests in telecommunications infrastructure such as cellular towers, associated real estate and active network equipment. It then leases this infrastructure to multiple tenants on a shared basis, offering each tenant access to the same portfolio of services and shared assets without favor – thus maintaining a neutral position.

This does not mean the tenants must take the same services or pay the same charges. The term 'neutral host' describes a single, or multi-unit installation, providing network-as-a-service (NaaS), delivering single or multi-operator capability in both the public and private domains.

The system can be managed by the company that installed it, a third-party managed service provider (MSP), or landlord or enterprise owners. It might be a purpose-built network, or it could become part of an existing network.

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[1] Small Cell Forum –www.smallcellforum.org

Neutral host is a relatively new concept, resulting from the need to provide service and coverage in areas where large MNOs does not have a business incentive to do so. This could be due to challenges involved in scaling-down the size & scope of the deployments, in dealing with a wide and disparate range of stakeholders such as landlords and local authorities and possibly a poor return on investment (RoI).

An important factor is that many planning authorities are reluctant to allow multiple operators on multiple sites. Even site sharing requires multiple antennas and cabinets at the base of the mast. On the other hand, with neutral hosts, costs for MNOs are reduced and, importantly for planning authorities, clutter is also reduced. If multiple MNOs use the neutral host system, RoI can be realized sooner than it would be with traditional deployment. Furthermore, venues can give visitors access to multiple operators rather than just the operator that has installed the network.

A neutral host infrastructure can be hosted on macro sites or small cells locations. Small cells are generally unobtrusive and can be positioned where the need is greatest, including indoors. They also involve a much smaller investment and a quicker install than traditional macros.

There are two ways that infrastructure sharing via neutral hosting can be achieved: multi-operator core network (MOCN) and multi-operator radio access network (MORAN).

In MOCN, the radio network is shared between the operators and the traffic is separated in the core and sent to different operator core networks. The spectrum, antennas, remote radio unit (RRU) and baseband unit (BBU) are shared between the operators.

In MORAN, the radio assets are split between the operators, and the traffic is kept separate in the radio access network as well. The operators use the same antennas but use different frequencies, BBUs, and RRUs.

Future 5G/6G deployments will also offer network slicing – another potential opportunity for neutral hosts. This is the ability to reserve an end-to-end slice of the network for one operator. The slices can be adapted up as required, larger or smaller, depending on traffic requirements.

Neutral host networks are becoming more common in venues, and it is expected that their use will rise significantly as MNOs look to keep costs low while deploying the latest technologies (such as standalone 5G & in future 6G).

Neutral host model brings the following benefits to policymakers and governments:

- **Digital inclusion:** Multiple networks aren't a cost-effective way to bring coverage to underserved areas. Shared infrastructure is. Neutral host networks can help to ensure equal access to essential services across even remote areas.

- **Economic growth:** Network densification can bring 4G and 5G to millions – but the multiple network approach makes it very expensive. The neutral host model simplifies the logistics and business model for network densification. That means better, affordable cellular service provision and enhanced business efficiency. It implies a boost to remote working, the digital economy, manufacturing automation integrating IIoT devices, for remote monitoring, supply chain management, and flexible manufacturing practices. All this results in faster, wider economic growth.

- **Simplified solutions**: Shared infrastructure means fewer site applications, faster approvals and more efficient coordination with regulatory bodies. There's also less equipment, meaning that there is less street clutter, faster deployment, lower costs and easier maintenance – alongside more mobile services for more citizens. It's a win-win for MNOs, venue owners and customers.

- **Efficient spectrum usage:** It makes sense for regulators to endorse the idea of optimizing spectrum usage, enabling and supporting multiple market players, ensuring fair access to spectrum resources, and fostering a competitive market environment. Neutral hosts can enable such solutions.

SCF considerations on the draft RSPG opinion

To recognize 2

Active sharing of RAN with neutral hosts is another approach which enhances the sharing of MNO bands (between MNOs, or between MNOs and third parties). Active sharing includes MORAN where MNO bands remain independent, or MOCN where a combined band is managed by a neutral host.

In particular, any frequency pooling (club use) could be operated as MOCN by a neutral host. A neutral host managing the pooled spectrum ensures impartiality with respect to the spectrum licence holders pooling their assets; it also improves the efficiency of spectrum use.

By its definition, a 'neutral host' is not competing with MNOs, so it will accrue benefits also in fragmented bands where spectrum for each MNO is less than deemed necessary for providing 5G services.

To recognize 3

Setting up local and vertical applications based on current 5G and forthcoming 6G equipment can be difficult for SMEs or local authorities, due to scaling and flexibility considerations.

SCF believes that neutral hosts provide a good approach in bridging the gap between smaller verticals and available spectrum, especially in the mid-band range.

To recognize 4

Shared multi-MNO solution is ideal when network densification is considered. Instead of multiple access points per MNO at a site, a single share access point operated by a neutral host brings benefits from cost, aesthetics, power consumption and environmental aspects.

The 3800-4200 MHz band work at CEPT, originated by RSPG Opinion 21-024, will serve an important role in network densification when managed by a neutral host as MOCN.

Other recognizes

We are largely in agreement with the RSPG findings in all the other recognizes 1, 5, 6, 7 & 8, and have no comments on them.

To recommendation

In many spectrum sharing scenarios, key stakeholders include entities such as neutral hosts, system integrators. In our opinion, they need to be involved in developing the strategy towards the launch of 6G services across the EU.