



On your marks, get set... go!

Though 5G may seem to be some time away, deployments are expected in some countries as early as 2020. Regulators and governments therefore have a unique opportunity to prepare for its arrival and to ensure that the maximum economic and social benefit can be derived from this next generation of mobile services. 5G will bring about a pivotal change in the way in which mobile networks are rolled-out, and the way in which services are delivered and used. These changes will potentially require different approaches to the regulation of spectrum and to the deployment and upgrade of infrastructure.

It is envisaged that 5G will enable many industry verticals (such as transport, construction and healthcare) as well as critical services (such as utilities and public protection) to have dedicated facilities with tailored performance. This may require them to build their own network infrastructure (e.g. along roads), potentially in their own spectrum, or to have guaranteed access to capacity on public networks.

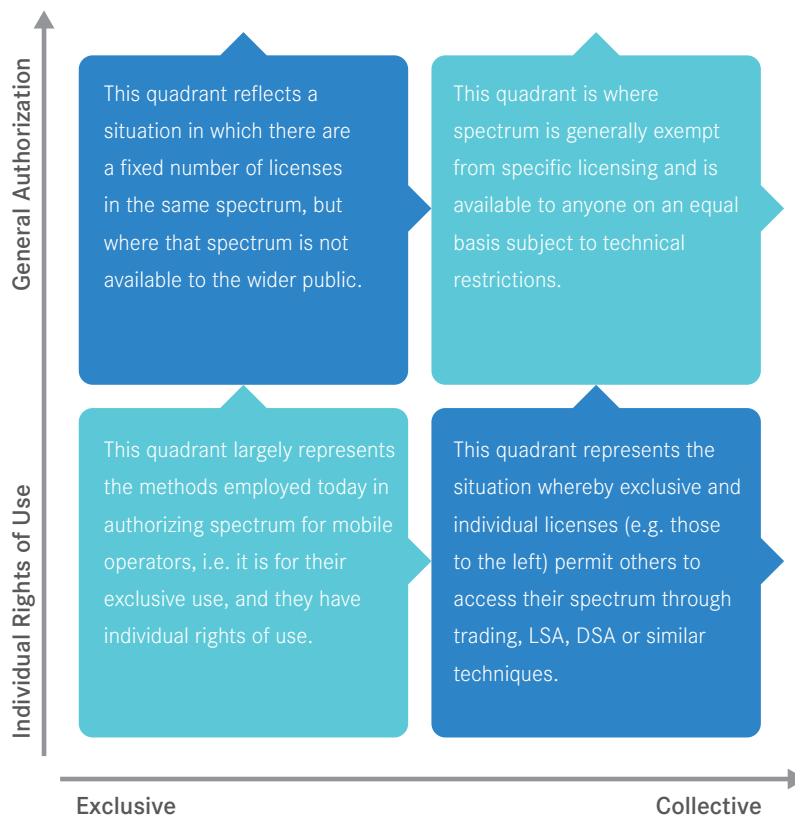
Given the envisaged need for increased network densification (a large increase in the number of cell sites), it seems unrealistic to assume that operators will continue to duplicate coverage,

and in many areas may share their radio access networks (RAN) to an even greater extent than today's practices of infrastructure sharing. It may be more efficient for them to also share their spectrum such that each cell site can have as much capacity as possible.

Niche players may emerge who provide specialized services such as in a limited geographic area (e.g. a village where it would be uneconomical for an existing operator to provide a service) or to a limited sub-set of users (e.g. vehicles only). The Internet of Things (IoT) seems set to grow in unlicensed or lightly licensed bands and these devices too may need to share access to harmonized 5G spectrum.

From a spectrum perspective, therefore, there is likely the need to move away from the traditional licensing model where all mobile spectrum is licensed exclusively to network operators for their individual use. Instead, a combination of individual, generally authorized, exclusive and collective use spectrum will be required to facilitate all the possible services expected from 5G networks. The different approaches are illustrated in the diagram on the next page.

Spectrum Authorization Requirements for 5G



From an infrastructure perspective, in addition to the likely need for an order of magnitude more sites, existing sites will also need to be upgraded. There will be a requirement for more space to support mobile edge computing (MEC) and local data caches that will drive 5G performance delivery and access to reliable power and gigabit backhaul exacerbating the practical and commercial challenges.



The time is therefore ideal to make preparations in readiness for 5G, such as:

- Ensuring that the national spectrum management framework will encourage the range of authorization and licensing options that will be needed for 5G, and not just the exclusive, individual approach most commonly used today;
- Considering how new specialist mobile service providers (e.g. industry or niche players) could gain access to spectrum, whether through secondary markets or freely accessible commons;
- Developing legislation to free the use of government and council properties (e.g. roads, street furniture, schools and offices) for operators to install 5G cell sites;

- Expanding permitted development rules for wireless operators to speed-up their ability to install new sites without needing to clear too many time-consuming planning hurdles;
- Checking that EMF regulations are suited to the radio environment that will exist when so many new mobile cell sites are installed, many in necessarily close proximity to the public.

LS telcom is already assisting governments and regulators with developing their spectrum and infrastructure policy and regulations towards 5G, and as a member of the UK's 5G Innovation Centre (at the University of Surrey) we are at the leading edge of developments. We also count over 90 regulators from around the world amongst our clients and understand the individual national pressures and consideration facing policy makers. We are therefore ideally placed to work with you to ensure that you are fully prepared and comprehensively informed when the time comes for 5G services to be launched.



5G base station