

This paper addresses the flexible-use spectrum rights. These would allow the radio frequency spectrum to be traded, aggregated, divided and freely used for a wide range of user-selected services. The contribution focuses on (1) radio propagation and (2) on unintended interactions among radio systems – two physical phenomena that restrict the practicability of these rights.

The physical restrictions do not depend on the spectrum management regime. They are the same when the spectrum resources are treated as private property, or as an open commons, or are regulated administratively, or managed through free market forces. Depending on the system isolation, a new (or modified) radio station can reduce efficiency of the neighboring stations. Questions arise, therefore, about related losses, compensation, market value, etc.

When a number of radio systems co-exist close to each other, they are linked together into a common network due to intended and unintended interactions. They must coordinate their operations to avoid mutual interference. This is done through the ITU radio regulations, frequency planning, agreements, etc. Once the coordination is done, a little flexibility exists, if any, to modify system operations.

On that basis, the author concludes that the flexible-use spectrum rights can be implemented in two cases only, in a congested environment. The first one is the case of an isolated system. The second case is when a new system does not require any interference protection from, and does not produce any interference threat to, the existing systems, or when it does not disrupt the existing signal equilibrium.

The last condition implies ‘intelligent’ radio systems that adapt themselves to co-exist with their neighbors without interference offer a solution. Only when such systems become popular, the flexible use of radio spectrum resources could be implemented in practice.