# Introduction:
# The radio-frequency spectrum, a resource to be urbanized and developed

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The radio-frequency spectrum is a scarce resource used by most of the applications on which our societies have, within a few decades, become so dependent, ranging from GSM to 5G, from Wi-Fi to Bluetooth, from GPS to satellite imagery, from FM radio to DAB, DDTV and television by satellite. Many an essential activity relies on this spectrum — transportation by air, river and sea, defense and security systems, scientific and spatial research, meteorology, monitoring of the climate and Earth's resources….[1]

Five billion people currently subscribe to at least one mobile service, including three billion for wideband. Thanks to six billion receivers of radio navigation by satellite, we can be located at all times and at any point on the globe. Nearly two billion people have digital terrestrial television (DTTV); and more than a billion, a receiver for television via satellite. All of this uses frequency bands that have been harmonized, organized and protected worldwide for decades now, while the underlying technology has been undergoing development.

This outcome, which has mustered investments amounting to billions of dollars, is not a happenstance. To obtain it, the efforts of all nation-states and stakeholders on the planet have had to be brought together, for more than a century, in order to organize and manage the spectrum on Earth and in space rationally, fairly, efficiently and economically so as to:

- protect the investments already made from harmful interference and see to their long-term security thanks to binding national and international regulations that are stable, predictable and strictly enforced;
- to regularly update and adapt these regulations to changes in technology and the needs of societies in all countries; and
- to harmonize internationally services on the spectrum and see to the universal application of standards, this being necessary for economies of scale at terminals and in network equipment, for the interoperability of radiocommunication networks and for roaming mobile services.

Owing to ongoing technological progress and the resulting changes in uses of the spectrum, parties within the competent national and international agencies relentless vie to impose the "right" form of management of radio frequencies.

This *Digital Issues* seeks to shed light on the viewpoints and visions of the various stakeholders — governments, regulatory authorities, manufacturers and operators — involved in managing the spectrum. How to best adapt this management to changing uses and techniques? The first section describes the legal frameworks (world, regional and national) and economic dimensions of this management while also discussing the issues of control and health. The second and third sections use examples to show how changes in uses and technology repeatedly raise questions about the organization of the spectrum, its evolution and adaptation.

For you reading pleasure…

[1]This article has been translated from French by Noal Mellott (Omaha Beach, France).