The essence of an industrial revolution is in its ability to transform a society and the economic and social relations within it. Historically, there have been three industrial revolutions. The first brought the steam engine, the second electricity and the third electronics and automated production. Each had profoundly influenced the world. The fourth – the revolution we are witnessing today – is the digital revolution. Although it is tempting to simplify it as a mere ‘digitalisation’ of society, there are three reasons why this revolution is like nothing we have witnessed before: it has spread faster than any of the previous ones, it has a significantly wider scope and it is arguably having a more profound impact. Although the fourth industrial revolution is marked by many seemingly different developments (robotics, AI, IT clouds, the Internet of Things, nanotechnology, and so on) the connecting factor is the fact that technology becomes embedded in the society and the society itself becomes dependent on the technology. In most of the examples above, telecommunications – which can be defined as transmission of messages by electromagnetic means – has been an enabling and necessary factor, much in the way that the third industrial revolution would have been impossible without developments in cybernetics and automation, the second without electricity or the third without the steam engine. Modern industry depends on fast and affordable fixed and wireless platforms on which applications and services can be offered. Telecommunications networks and services have become as necessary to modern society as steam engines or electricity were before them. Telecommunications is, therefore, the bloodflow of the latest industrial revolution.

The pipelines which carry the telecommunications signals are taken for granted. Much of today’s economic and societal activities take place with an assumption of their permanence and constant improvements in cost and efficiency. But those pipelines are scarce assets and commodities, and therefore subject to economic laws. This makes them valuable and subject to political processes. It is not a mistake to state that most of the

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history of telecommunications in the world is the history of establishing structures or improving those approaching obsolescence. Ultimately, this is reflected through the simple fact that telecommunications is regulated. It is subject to a process in which governments determine the modes of operation of and access to telecommunications networks and services. In regulating telecoms, governments set themselves different policy objectives. They can opt for increasing coverage. They can decide to invest in next-generation networks. They can prioritise access for rural areas. At the same time, regulators face various restraints and limitations. The biggest of these is the fact that developing telecommunications networks and services is expensive and risky, a fact that is also true for many other networked industries (such as railways or energy). Regulators often face conflicting aims, or aims which require politically sensitive tradeoffs. They also face pressures from various interest groups whose demands often conflict. Telecommunications is, therefore, a regulated activity in which different policies may result in vastly different outcomes. Telecommunications law, thus defined, looks at the operations of telecommunications companies and assets, at the conditions for market entry and at access to and interconnection with existing networks, as well as users’ rights and the development of new networks.

Telecommunications law has a reputation for being difficult and somewhat uninspiring. Whereas law often has an element of excitement and invokes visions of tense courtroom dramas, the abstract idea of justice or complex international disputes, telecommunications is associated with dusty telephone switchboards, old cables and greedy yet inefficient networked industries. But the element of excitement now comes in the form of an unusual feature of today’s Internet – convergence, which can be defined in the simplest terms as the fact that different services are provided through a single data stream. This is significantly different from the situation in the past century when post, telephone, radio, television and other media all operated on separate networks and were regulated separately. The telecoms companies of today are vertically integrated and provide a variety of services. The governance of the signal suddenly became an issue of vital importance for all.

This author has encountered telecommunications in various efforts to understand Internet regulation. The latter, although mostly covering content, occasionally also concentrated on the carrier – the wires on which the content runs. The questions thus naturally became: when does ownership or control of the carrier have an impact on the content? Is it important that one and the same vertically integrated company owns both the cables and the programmes running on them? What is the importance
of technological convergence – the fact that most digital services today run on the Internet? These questions are unlike any which telecommunications regulators have faced before. To understand the realities of modern telecommunications, it is necessary to understand both the content being transmitted and the governance of the signal used for that transmission. Since the EU has intervened significantly in this area, and was in the process of launching significant reforms at the time this work was under consideration, the subject of this book imposed itself naturally.

The main purpose of this book is to present, in a clear and comprehensive way, the multitude of EU sources that apply to telecommunications regulation. These sources have grown to such an extent that the 2009 edition of the Regulatory Framework runs to 300 pages, not including any supporting and interpretative documents. The book aims to outline the regulatory objectives, principles and tools upon which telecoms regulation in Europe rests. To do this, the secondary laws that form the bulk of that regulation and many other instruments that complement it will be analysed. Equally importantly, we are currently witnessing an important attempt to reform the Regulatory Framework in light of the challenges it faces. The book will therefore also provide a review of the 2016 telecommunications reform presently in the process of adoption.2

There are currently few books that cover the entirety of telecommunications law in the EU.3 While some provide a comprehensive and detailed overview of many different aspects of the 2009 Regulatory Framework,4 others primarily explain the competition law aspects,5 or concentrate on the relevant national implementation.6 The aim of this work is to explain telecommunications law in relatively simple and straightforward terms, but also to provide concise information about many parts of the Framework, including TV and radio regulation, spectrum management and elements of privacy and security protection. Such an approach inevitably means that each of the areas is covered

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2 The final adopted version will almost certainly be somewhat different.
3 An introduction to the problems of telecommunications regulation can be found in the still relevant IBRD/World Bank/ITU Telecommunications Regulation Handbook (10th anniversary edition 2011).
5 Liyang Hou, Competition Law and Regulation of the EU Electronic Communications Sector (Kluwer, Alphen aan den Rijn 2012).
relatively concisely. Rather than approach the task on a sector-by-sector basis (fixed access, wireless, spectrum, and so on), the book will follow the subjects by type of intervention (authorisation, access, universal service, and so on). This essentially means that the framework suggested in the latest comprehensive telecommunications reform (2009) will be followed. That reform, itself an update of an earlier one from 2002, joined together a number of disparate EU instruments. In addition to this, the 2016 proposals (in particular, the European Electronic Communications Code (EECC)) are included in each relevant section rather than in a separate chapter.

The book’s introductory section explains the development of EU telecoms policy and the fundamentals of telecommunications regulation in the EU. Chapter 1 offers an overview of the politics of telecommunications law and regulatory principles and objectives that inform EU telecoms regulation. It continues by describing economic principles and providing a brief overview of the development of regulatory intervention first in the United States and then in the EU. The chapter concludes with an overview of regulatory challenges facing the EU. Chapter 2 is dedicated to outlining the developments and the current state of EU telecommunications policy, from its earliest days, through liberalisation and harmonisation efforts in the 1990s and the comprehensive reforms of 2002 and 2009, to the current reform. Chapter 3 outlines the EU regulatory framework for telecoms, including competences, institutions, the difference between content and carrier layers, regulatory instruments, regulated activities and basic principles arising from the Framework Directive. Chapter 4 addresses competition law as the main instrument of telecommunication liberalisation, which is of particular importance since telecoms regulation in the EU has always been at the crossroads between traditional competition law and hybrid *ex ante* regulation. It also sets out the basic steps to be performed in determining that an undertaking has significant market power (SMP), which are needed to apply the remedies described further in Chapter 6. Chapters 5–7 follow the Authorisation, Access and Universal Services Directives as fundamental parts of EU harmonisation and also address the proposed changes in the European Electronic Communications Code. Chapter 8 covers consumer protection measures. Chapter 9 addresses the EU regulation of cable and broadcasting as well as aspects of audio–video regulation that apply to the carrier layer. Chapter 10 discusses the biggest policy controversies in present EU telecommunications law: regulating over-the-top content (OTT) providers, net neutrality and enabling investment. The final chapter is dedicated to privacy measures, including the adopted General Data Protection Directive and the proposed ePrivacy Regulation.
Although the first three chapters are introductory in nature, the book is not necessarily best read in order.

Attempts to understand the telecommunications framework today are complicated by several factors. The first is the division of competences between Member States and the European Union. Telecommunications law, in spite of very significant EU efforts, is not a fully harmonised area. On the contrary, one of the significant EU efforts in the 2016 reform was precisely to increase coordination between independent national regulatory authorities. As such, understanding national regulation in any particular country presupposes knowledge of that country’s laws. These will remain outside of the scope of this book.

Second, while there are two distinct regulatory frameworks – content and carrier – the reality is significantly more blurred and not easily put into boxes. Many activities are consistently subject to two or three regulatory circles at the same time and some EU Directives do not easily lend themselves to being classified as falling into either (the ePrivacy Directive is the primary example). These are not necessarily coordinated and it may not always be easy to understand if an activity is covered by one or several frameworks. A real-world phenomenon does not automatically translate into a discreet legal setup, falling neatly into either of the two areas. A basic question that always needs to be asked when facing a telecommunications phenomenon is: which regulatory circles apply?

In addition, EU telecommunications regulation has been subject to constant, and confusing, changes. In spite of frequent simplifications, there are presently more than 20 different Directives, Regulations, Decisions, and other instruments covering EU telecoms. The rules are lengthy, complex and, as a rule, exceptionally difficult to understand. Almost all Directives are subject to extra recommendations, guidelines or opinions from various bodies. Since 2002, there has been a major overhaul every seven years. The 2016 package is not simpler than its predecessors: it is both longer (the EECC Directive is over 250 pages long) and more complex. It will require years of interpretation by national authorities and the Court of Justice of the European Union (CJEU). This complexity is not a result of the EU’s lack of competence nor of its purported bureaucratisation; it is simply a reflection of the fact that creating telecoms policy is both a complex and a politically loaded exercise.

These developments are taking place at a time when the EU is beginning to lag behind the United States and countries of East Asia in both wired and wireless connectivity and use. Within the EU itself,
differences exist between the more developed north and the less developed south. The advantages that the EU held more than a decade ago have evaporated and the region is subject to strong competition. Regulatory choices could either cement this lag or set the region on course for a more dynamic future.

In spite of all of the above, there are reasons to be mildly optimistic. The fact that EU telecoms law began cautiously, combining liberalisation and harmonisation and targeting specific problems, and only then expanded is a sign of flexibility and adaptability. This was demonstrated in the first comprehensive regulatory reform – that of 2002 – and in each subsequent one. While it may sound clichéd to say that the future depends on wise regulatory choices, this statement is more correct for modern telecoms than for many other matters.

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It has been said that when one is just a few steps away from one’s core competence, there is serious danger of misapprehension. Nowhere is this more apparent than in telecoms regulation, where a good dose of humility is necessary for making any progress. The knowledge of technical aspects, competition, management and economics has to go hand in hand with the knowledge of law. This book does not pretend to be an overview of any of these other disciplines. It does not explain the technical concepts behind various telecommunication technologies except where this is absolutely necessary. Such an effort would have taken too much space, and in most cases a deep understanding of the underlying technologies is not necessary for comprehension of regulatory concepts and their impact on reality. It would, however, be a mistake to dismiss the technology’s impact on law entirely. Often, it is precisely the regulator’s lack of understanding of the technical side that leads to bad solutions. Equally importantly, some understanding of the economic concepts behind telecoms regulation is necessary, as is a knowledge of competition law. While there is no doubt that an economist or a competition lawyer will find many faults in the text, this book is not an economic analysis, nor a competition law monograph. In conclusion, those seeking an overview of the legal aspects of this story will find the basics here, but those who desire a complete understanding must also put some effort into understanding other disciplines which inform the subject.

This book relies on the currently valid 2009 Regulatory Framework while attempting to highlight the changes that the proposed European Electronic Communications Code would bring about if adopted. To minimise confusion, discussion of documents that are only of historical
importance, having been subsumed into the 2009 Framework, is kept to a bare minimum. Finally, unlike Internet law, telecommunications law, which is largely in the hands of national authorities, has not been significantly profiled by the Court of Justice’s case law. This means that this book does not feature lengthy discussions of CJEU cases where these only have a narrow impact on the way the Framework is applied. Further, the enforcement of EU telecommunications laws still largely lies in the hands of national authorities. This means that it is difficult or impossible to obtain a full picture without looking at national authorities’ practices.

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The 2002 Regulatory Framework changed ‘telecommunications’ to ‘electronic communications’. This book preserves the older, more traditional name for practical reasons. ‘Electronic commerce’, which belongs in the content layer, sounds uncomfortably similar to ‘electronic communications’ and the danger of confusion between the two is real.

The law is up to date as of 1 January 2018.