

# CMS Network Sharing Study 2014

The 4G race – catching up or falling behind?

# Table of contents

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|                                                               |    |
|---------------------------------------------------------------|----|
| Foreword                                                      | 3  |
| The future is bright for network sharing                      | 4  |
| Executive summary                                             | 5  |
| Overview of network sharing deals                             | 6  |
| Network sharing deals completed in 2013                       | 8  |
| Types of mobile networks affected and shared network elements | 10 |
| Vehicles of coordination for sharing                          | 11 |
| Regulatory developments                                       | 12 |
| Individual notes for specific countries                       | 16 |
| Key contacts                                                  | 22 |



# Foreword

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We are delighted to present the first edition of the CMS Network Sharing Study 2014 (the 'study'). The study provides an analysis of network sharing deals completed in 2013<sup>1</sup> and identifies the main characteristics of each circumstance. We plan to produce the study annually, helping to identify any developments, issues or trends that may be emerging.

With the market trend for strong increases in mobile data demand set to continue, operators are facing an ever-increasing need to invest in both infrastructure and spectrum. This, combined with falling revenues, means they are being forced to look for ways to reduce or consolidate the costs involved in rolling out high-speed mobile networks. One possible approach for such consolidation is increased M&A activity. In fact, the EU mobile telecoms industry is likely to witness increased consolidation very soon following the recent cases in Austria, Germany and Ireland. An alternative approach to M&A is for service providers to share the burden of investment by sharing access to either the newly rolled-out infrastructure or the newly acquired spectrum. With European regulators still seemingly opposed to consolidation activity to below a certain number of

players, it is not surprising to find infrastructure and spectrum sharing deals on the rise however. The structures of sharing deals, the elements shared and the coordination methods of these deals, however, differ widely.

This study, which to our knowledge is the first of its kind, gathers information from CMS lawyers across 22 countries, summarising the types of sharing deals, the networks affected, the network elements involved in the sharing and the types of vehicles or structures for coordination of the sharing; in addition the study documents major deals and developments within these countries as well as highlighting any regulatory specifics.

We do hope this study provides some useful insights into the types of sharing activity in your jurisdiction as well as helping you assess the market situation in countries of interest, and will assist you in making well-informed decisions about national or pan-European networks. We are of course very interested in any suggestions, and would be more than happy to discuss and share any experiences with you.



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<sup>1</sup> The study also includes deals that were completed very close to 2013.



# The future is bright for network sharing

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## Demand

The growth story for mobile devices is expected to continue in 2014 with predicted growth levels of 7.6% (as predicted by Gartner<sup>2</sup>). Most of this increase will come from tablets, hybrid laptop-tablets and similar, so-called ultra-mobile devices that generate greater volumes of mobile data traffic than smartphones. Cisco expects mobile data traffic to grow at a CAGR of 61% until at least 2018,<sup>3</sup> whilst IDC expects our “digital universe” to grow (from the current approx. four Zettabytes) to 40 Zettabytes in 2020;<sup>4</sup> that’s 14 Exabytes of new data per day. This clearly shows that the market trend for increases in demand for mobile data is here for the foreseeable future.

According to recent studies, this exponential growth in mobile data demand will require service providers to invest in new and expensive infrastructure and spectrum; 3G can no longer meet these demands. Providers have to increase 4G coverage, firstly to remain competitive but also to meet obligations committed to when bidding for 4G spectrum. Furthermore, providers have to ensure that investments made into 4G will bring returns in a relatively short time frame. Commissioner Neelie Kroes is already trying to push companies into developing 5G-based infrastructure.<sup>5</sup> Similarly, future generations of mobile broadband may require a complete refresh of the newly rolled-out active equipment. As technology changes, previously acquired expensive spectrum licenses might become considerably less attractive – regulators may consider changing conditions in the bands already awarded, new bands might offer cheaper or otherwise technically preferred service alternatives, and governments may arrange for fresh auctions of these newly opened-up bands.

With this in mind, investors remain cautious about the profit outlook for such investments; at the same time international roaming charges in the EU are set to be abolished and operators are seeing revenues being further eroded by pure play internet companies such as eBay and Amazon and over-the-top (OTT) companies like Skype and WhatsApp, (which are not subject to the same regulatory burdens as electronic communications service providers although some regulators are thus clearly trying to level the playing field by pursuing legal

recourse against OTT players).<sup>6</sup> Mobile operators are thus being forced by the market to look for ways to consolidate further the cost of rolling out high-speed mobile networks. Currently, over 100 firms operate their own mobile phone networks in Europe. As one of the executives of a leading operator has said: *“There is not enough space in Europe for all the networks out there today.”*<sup>7</sup>

## Solutions

One possible approach for such consolidation is increased M&A activity. An alternative approach is for service providers to share the burden of investment by sharing access to either the newly rolled out infrastructure or the newly acquired spectrum. With European regulators seemingly still opposed to M&A activity below a certain number of players in a given market, infrastructure and spectrum sharing deals are not surprisingly on the rise. EU Competition Commissioner Joaquín Almunia has stated that in reaching the desirable, genuine single market in the sector, the Commission is in favour of network sharing deals. The new “Connected Continent” draft regulatory package also clearly emphasizes the spectrum-sharing possibilities. Several national regulators (like ARCEP and the competition office in France) have done the same, issuing different forms of opinions or declarations. We see that network sharing is becoming a regular remedy as part of a merger clearance process (e.g. in Albania or Portugal). Network access remedies used in the most recent cases in Germany and Ireland may qualify as network sharing in the wider sense too. Regulators exhibit considerable differences in what they deem as advantageous for competition. They do not seem to agree on what parts of the network should be shared (passive elements only, active radio elements as well, spectrum etc.). More and more countries have adapted new spectrum regulations under which a previously uniform frequency range may be shared by multiple providers based on smaller blocks. This trend is strengthened by certain EU-level spectrum specific regulations, especially that of licensed shared access as discussed in ECC. Major differences can also be noted in terms of whether or not significant market power (SMP)-based obligations mandate incumbents to share some parts of their infrastructure.

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<sup>2</sup> <http://www.gartner.com/newsroom/id/2645115>

<sup>3</sup> Cisco VNI Mobile Forecast 2013–2018, [http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white\\_paper\\_c11-520862.pdf](http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.pdf)

<sup>4</sup> Digital Universe in 2020 report, <http://www.emc.com/collateral/analyst-reports/idc-the-digital-universe-in-2020.pdf>

<sup>5</sup> [http://europa.eu/rapid/press-release\\_SPEECH-14-155\\_en.htm](http://europa.eu/rapid/press-release_SPEECH-14-155_en.htm)

<sup>6</sup> [http://www.arcep.fr/index.php?id=8571&L=1&tx\\_gsactualite\\_pi1%5Buid%5D=1593&tx\\_gsactualite\\_pi1%5BbackID%5D=26&cHash=014dd3fb9f55d8136bcd357409d0ad14](http://www.arcep.fr/index.php?id=8571&L=1&tx_gsactualite_pi1%5Buid%5D=1593&tx_gsactualite_pi1%5BbackID%5D=26&cHash=014dd3fb9f55d8136bcd357409d0ad14)

<sup>7</sup> Eduardo Navarro, Telefonica director of strategy and alliances, 23 April 2013, Reuters, <http://www.reuters.com/article/2013/04/23/telefonica-germany-idUSL2N0DA1CM20130423>

# Executive summary

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## The deals

The findings of the study suggest that most of the recent deals have been focused in Western and Central-Eastern Europe, with more blank spots in the southern parts of Europe.

These deals have involved all generations of networks. However, it is notable that in certain jurisdictions, network sharing did not cover the 4G networks currently being rolled-out.

As for the network elements shared, virtually all possible combinations have been seen. RAN sharing seems to be the minimum scope of sharing, and there has been little or no activity restricted to purely passive elements (technically, RAN sharing also involves at least a minimum sharing of passive elements, e.g. at least power).

Spectrum sharing and related trading is still not universal among the deals, but it is no longer exceptional either. The relative “unpopularity” of spectrum sharing could be partly due to the existing regulatory uncertainty. Spectrum sharing could provide significant savings in a number of countries, and it is almost a technical necessity for the effective use of certain frequency bands. However, we still see that almost all the authorities are either clearly against it or reluctant to give a clear message to market participants of the conditions on which they will be prepared to permit it.

Despite clear technical possibilities for operators to share spectrum ranges, authorities still require operators to seek prior permission before doing so; quite often regulators retain the right to revoke such approvals. Unclear conditions are not conducive to secondary trading of spectrum. Stronger cooperation between competition and communications authorities could result in an even greater take-up of network sharing.

Stand-alone horizontal agreements were slightly more popular compared to joint ventures. A possible explanation could be that, at first glance, these appear to raise fewer competition law concerns and authority scrutiny than forming a joint venture. However, competition law also restricts horizontal type agreements to simpler forms

of network sharing. In horizontal agreements, due to stricter confidentiality requirements, there is less possibility of transparency between the parties involved. Only a joint venture form can give the parties involved maximum transparency, and also, effective tools for solving problems related to long term cooperation.

## Competition issues

Asset-heavy types of joint ventures were rare in Europe this year. One reason could be that the principle of “infrastructure based competition” is still a leading topic on most regulatory authorities’ agendas.

When EU authorities voice their concerns regarding certain types of network sharing (e.g. spectrum sharing, sharing of active infrastructure), they quite often cite a possible decrease in network based competition. Understandably, it is very hard to reconcile the concept of network sharing with network based competition – they are in fact, to some extent, inconsistent with each other. Therefore, the main question is not *whether* network sharing is supporting network based competition but *how* it is supporting it. When considering whether to support a certain form of sharing, an authority should, amongst other factors, give proper weight to how much saving that form of network sharing could provide, and how much it costs for providers in that given market to obtain the necessary access rights to spectrum.

**In light of the vast pressure on the operators, and in light of the lack of progress in EU member states in terms of 4G coverage (when compared to its major peers, like USA, Japan and even China), it could be time to give a new, more investment-friendly meaning to network based competition, and to consider service based competition.**

**The most recent merger cases in Germany and Ireland at least confirm that competition may stay strong even if the number of networks is reduced. We believe that this approach will also have an impact on the assessment of network sharing arrangements.**

# Overview of network sharing deals

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In the 22 countries surveyed, there were a total of seven deals concluded in 2013, with a further five completed very close to 2013.

The study focusses primarily on mobile network sharing, so does not include deals that were fixed line specific. Therefore, we have excluded agreements between companies for generally available access products that are offered by wireline providers to any customers, including mobile network operators (e.g. providing bitstream capacity for backhaul, dark cable/fibre services etc.). We have also not considered unbranded agreements with mobile virtual network operators (MVNOs) as

network sharing. In addition, we did not consider the new types of agreements that have emerged as a result of the most recent merger cases in Germany and Ireland which constitute capacity deals and, hence, may also qualify as network sharing in the broader sense.

To give meaningful context to the study, opposite is a map giving an overview of current market potentials, more specifically per capita GDP, mobile cellular subscriptions and penetration and also mobile broadband penetration. The map overleaf shows the deals themselves including the type of networks and sharing involved based.<sup>8</sup>



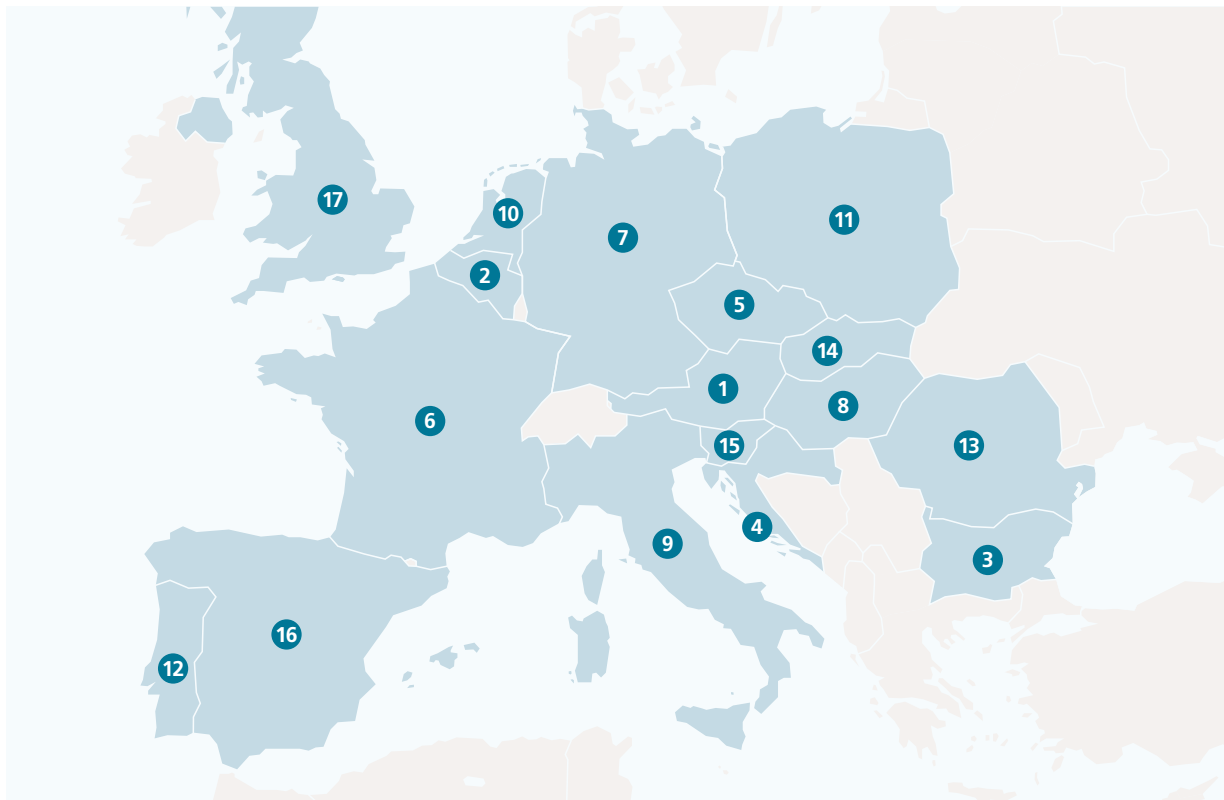
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<sup>8</sup> Source for the number of mobile cellular subscriptions (2012) was ITU statistical data at [http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2013/Mobile\\_cellular\\_2000-2012.xls](http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2013/Mobile_cellular_2000-2012.xls)

Source for mobile broadband data in Europe was the European Commission Digital Agenda Scoreboard, at <https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/DAE%20SCOREBOARD%202013%20-%20202-BROADBAND%20MARKETS%20.pdf>

For China, we had access to 3G penetration data from <http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats/b#mobilebroadband>

For GDP and population data (2012) we used the corresponding United Nations statistical data, which was <http://unstats.un.org/unsd/snaama/dnltransfer.asp?flID=2>; <http://unstats.un.org/unsd/snaama/dnltransfer.asp?flID=24>



| 1 Austria        |
|------------------|
| € 46.604         |
| 📶 160.5% 📶 53.0% |

| 2 Belgium        |
|------------------|
| € 43.707         |
| 📶 111.3% 📶 33.0% |

| 3 Bulgaria       |
|------------------|
| € 7.004          |
| 📶 148.1% 📶 40.0% |

| 4 Croatia |
|-----------|
| € 13.105  |
| 📶 115.4%  |

| 5 Czech Republic |
|------------------|
| € 18.428         |
| 📶 126.8% 📶 45.0% |

| 6 France        |
|-----------------|
| € 39.617        |
| 📶 94.5% 📶 44.0% |

| 7 Germany        |
|------------------|
| € 41.376         |
| 📶 111.6% 📶 41.0% |

| 8 Hungary        |
|------------------|
| € 12.490         |
| 📶 116.1% 📶 23.0% |

| 9 Italy          |
|------------------|
| € 33.069         |
| 📶 159.8% 📶 52.0% |

| 10 The Netherlands |
|--------------------|
| € 46.073           |
| 📶 118.0% 📶 62.0%   |

| 11 Poland        |
|------------------|
| € 12.820         |
| 📶 140.3% 📶 74.0% |

| 12 Portugal      |
|------------------|
| € 20.006         |
| 📶 116.1% 📶 33.0% |

| 13 Romania       |
|------------------|
| € 7.787          |
| 📶 105.0% 📶 27.0% |

| 14 Slovakia      |
|------------------|
| € 16.774         |
| 📶 111.9% 📶 41.0% |

| 15 Slovenia      |
|------------------|
| € 21.947         |
| 📶 108.6% 📶 37.0% |

| 16 Spain |
|----------|
| € 28.278 |
| 📶 108.4% |

| 17 UK            |
|------------------|
| € 39.367         |
| 📶 135.3% 📶 84.0% |

■ Countries reviewed

€ Per capita GDP in USD (2012)

📶 Mobile cellular penetration (June 2012)

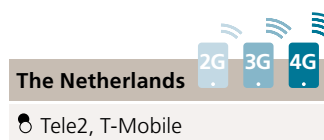
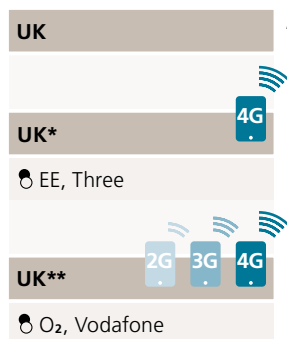
📶 Mobile Broadband penetration – all active users (January 2013)<sup>9</sup>

<sup>9</sup> <https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/DAE%20SCOREBOARD%202013%20-%20202-BROADBAND%20MARKETS%20.pdf>

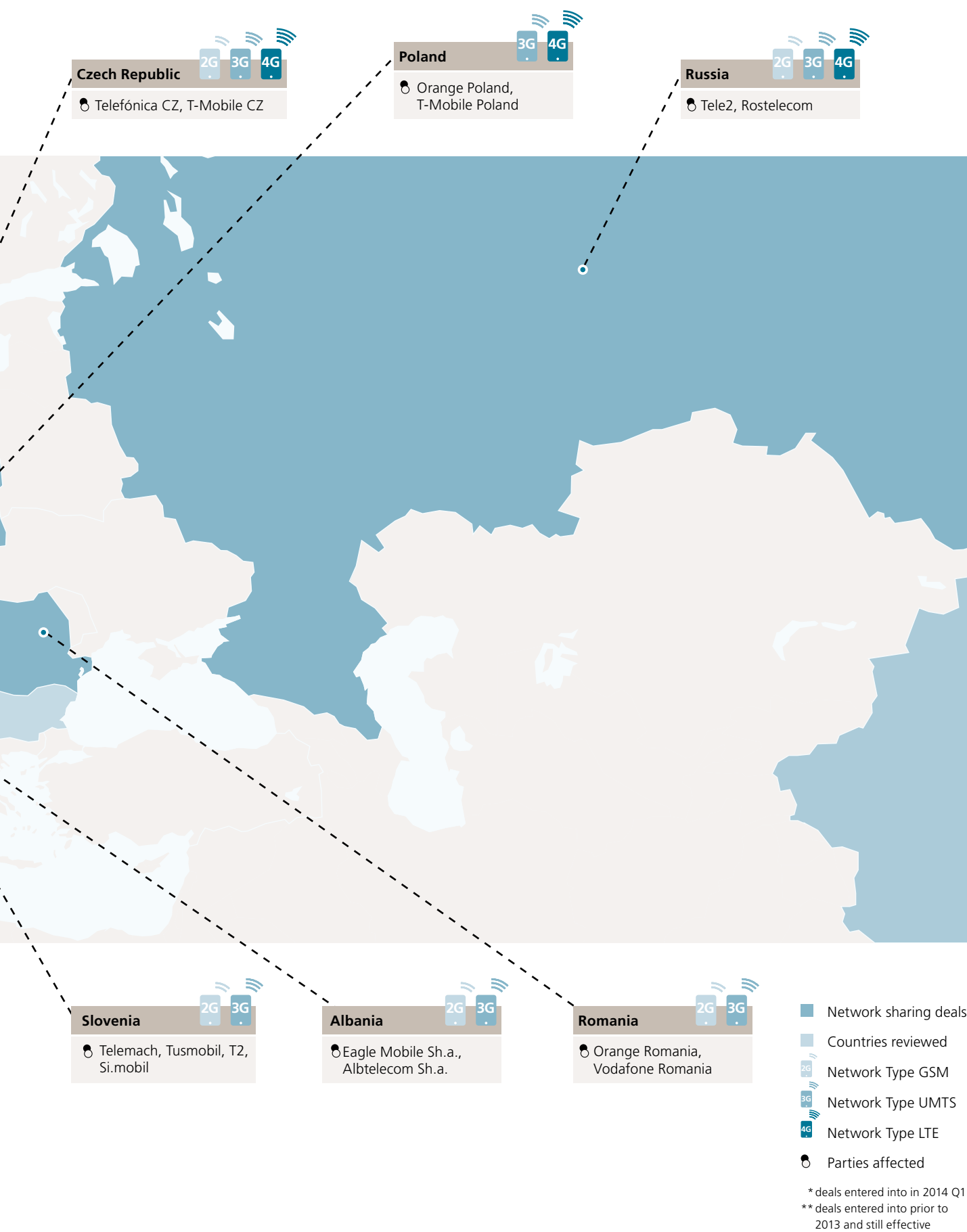
# Network sharing deals completed in 2013

## CMS' views

It is evident that most of the recent deals focused on Western and Central-Eastern Europe, with more blank spots in the southern parts of Europe.

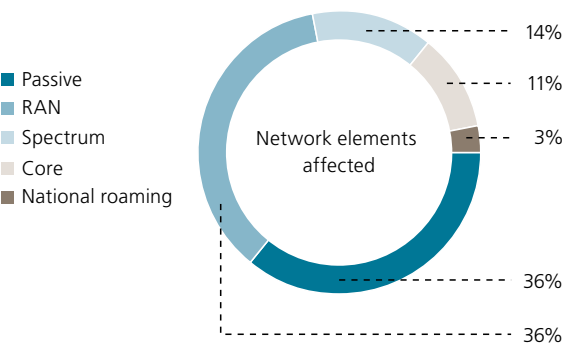




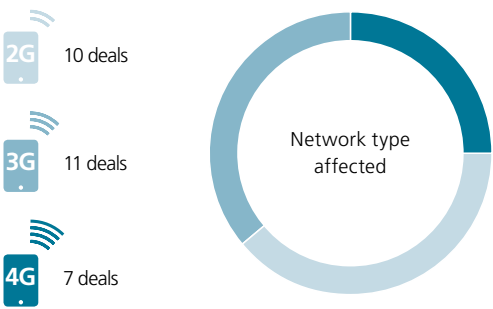


# Types of mobile networks affected and shared network elements

The chart below, shows which elements of the network were shared in the deals completed.



In the study, we also indicate which *generation network* (2G–4G) the network sharing deal affects<sup>10</sup>.



In our study, we have taken the approach that:

| Sharing of:                              | Means:                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| passive elements                         | Sharing of those parts of the access network that serve the active, also called “radio access” network elements (which make use of radio interface). These include sharing of masts, towers, sites, cabinet, or even power or air conditioning. As we see from European regulatory approaches, there is a considerable difference between passive and active sharing from a regulatory viewpoint.                                                                                 |
| active, or radio access network elements | Sharing of antenna and devices that connect to such antennae, including base stations, NodeB and eNodeB units etc. (the exact name of the devices are technology specific, and are of little practical importance in this study).                                                                                                                                                                                                                                                 |
| spectrum                                 | Radio spectrum used to access only terminal equipment.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| core network elements                    | Sharing of different elements outside the access network of a mobile operator, including core elements of 4G networks such as MME (Mobility Management Entity), SGW (Serving Gateway), or transmission rings or backhaul facilities, or logical elements (e.g. billing/VAS). Sharing these parts of the network will only rarely have a considerable cost-cutting in themselves, and “sharing” of backhaul facilities often verges on the express exclusions we have made above.  |
| national roaming                         | Traditionally viewed as network sharing. Here, subscriber traffic from the served areas is served by one operator (the host) by routing this traffic to the guest operator, handing it over to the latter at certain central points of exchange, and then routing back traffic to the user the same way. In this case, the guest operator is using the host operator’s network as a complete access network for the roaming sites and for routing traffic to and from that place. |

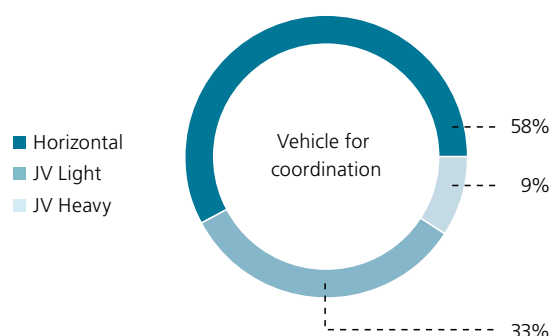
## CMS’ views

Most of the deals affected every possible network element, regardless of the generation of the network. It was noteworthy that in certain jurisdictions, network sharing did not cover the 4G networks being rolled-out. Turning to the network elements shared, it is evident that RAN sharing is now the minimum, and in most cases, this also needed to cover sharing of passive elements

(e.g. at least supply power to shared active elements). Spectrum sharing is still not universal among the deals, but it is no longer exceptional either. Arguably the most plausible explanation for the unpopularity of spectrum sharing is due to the regulatory burdens (see below on page 14).

<sup>10</sup> Please refer to the map on pages 8/9 to see the types of networks covered by each deal.

# Vehicles of coordination for sharing



When looking at the coordination structure for the network sharing, two major forms have emerged. One is the *stand-alone horizontal agreement*, where competing service providers enter only into a commercial agreement and this agreement covers all elements of the cooperation.

The second coordination is where parties form a joint venture for network sharing. This kind of cooperation can be further subdivided into two distinct types – light or heavy. In “asset heavy” joint ventures, the new joint venture will own all network assets that to be shared and, optionally, operators may also transfer their existing network elements to the joint venture (if they want to share that as well). Whereas in “asset light” joint ventures, the joint venture will not own network elements, but only serve as a vehicle for coordination and for settlement.

Of the 12 deals, seven were of the horizontal type, and the remaining five were joint ventures. All reserves, with the exception of one, were asset light.

## CMS' views

A possible explanation for the popularity of stand-alone horizontal agreements is that, at first sight, they appear to raise less competition law concerns and authority scrutiny than forming a common joint venture given that they are not subject to merger control. However, competition law also restricts this horizontal type of agreement to simpler forms of network sharing. In horizontal agreements, due to stricter confidentiality requirements, there is less possibility of transparency between the parties involved. Only a joint venture form can give the involved parties maximum transparency, and also, effective tools for solving problems related to long term cooperation.

As we can see, asset-heavy types of joint ventures are rare in Europe. One reason for this could be that the principle of “network based competition” is still a leading topic on most of the regulatory authorities' agenda. This could change soon following the most recent merger cases in Germany and Ireland where the EU Commission agreed to a reduction of networks subject to certain remedies.

# Regulatory developments

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Different aspects of network sharing have been subject to various ex ante regulation across the EU since the early 2000s.

The state and the methods adapted for the regulation are very diverse and the rules themselves are even more so.

In certain countries and market situations, merger clearance procedures have mandated network sharing, and the national Competition Authorities have been active in initiating inquiries or have even themselves issued guidance on how they will proceed with regard to such network sharing agreements.

In some countries (e.g. in France), network sharing has been scrutinized by both the competition authority and the electronic communications authority.

In a very large number of countries, the electronic communications authority has issued formal or informal guidance, notices on their support of network sharing or statements of the specific conditions that operators should fulfil if they want to share (e.g. in Poland and Czech Republic in 2013, in Belgium in 2012, in Germany and Austria in 2011 etc.).

Whether or not they have issued a specific network sharing guidance or notice, all EU members have to comply with the EU Radio Spectrum Policy, which requires at least symbolic support for different tools of spectrum sharing. This, however, is not yet visible in practice in most of the countries.

In a small number of countries, it was noted that operators identified as having significant market power (“SMP”) are sometimes subject to a remedy which includes elements of mobile network sharing obligations.

The results of the study are presented in tabular form on page 13.

| Country         | Regulatory measures taken                                                                                       |                                                     |                                                                                    |                                               |                                        |
|-----------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------|
|                 | ECS general notice or guidance (not deal specific approval, and excluding generic support for spectrum sharing) | Competition authority investigation started in 2013 | Other special competition law measure                                              | Special spectrum measures (outside EU reg.)   | Special other network sharing measures |
| Albania         |                                                                                                                 | ✓ (against Vodafone in 2013)                        | Sharing required in 2011 merger                                                    |                                               |                                        |
| Austria         | ✓ (2011)                                                                                                        |                                                     |                                                                                    |                                               |                                        |
| Belgium         | ✓ (2012)                                                                                                        |                                                     |                                                                                    |                                               | ✓                                      |
| Bulgaria        | No regulatory measures taken                                                                                    |                                                     |                                                                                    |                                               |                                        |
| China           |                                                                                                                 |                                                     |                                                                                    | Only with prior approval from NRA             | ✓                                      |
| Croatia         | No regulatory measures taken                                                                                    |                                                     |                                                                                    |                                               |                                        |
| Czech Republic  | ✓                                                                                                               |                                                     |                                                                                    | Only with prior approval from NRA             |                                        |
| France          | ✓ (2013)                                                                                                        |                                                     |                                                                                    |                                               |                                        |
| Germany         | ✓ (2011)                                                                                                        |                                                     |                                                                                    | Only with prior approval from NRA             |                                        |
| Hungary         | No regulatory measures taken                                                                                    |                                                     |                                                                                    |                                               |                                        |
| Italy           | No regulatory measures taken                                                                                    |                                                     |                                                                                    |                                               |                                        |
| The Netherlands | ✓ (in 2001)                                                                                                     |                                                     |                                                                                    | As per "Multi-frequency auction" terms (2012) |                                        |
| Poland          | ✓                                                                                                               |                                                     |                                                                                    |                                               |                                        |
| Portugal        |                                                                                                                 |                                                     | Zon-Optimus merger will be subject to network sharing between Optimus and Vodafone |                                               |                                        |
| Romania         |                                                                                                                 |                                                     |                                                                                    | No sublicensing by operator                   |                                        |
| Russia          |                                                                                                                 |                                                     |                                                                                    | ✓ (under discussion)                          | ✓                                      |
| Serbia          | No regulatory measures taken                                                                                    |                                                     |                                                                                    |                                               |                                        |
| Slovakia        | No regulatory measures taken                                                                                    |                                                     |                                                                                    |                                               |                                        |
| Slovenia        | No regulatory measures taken                                                                                    |                                                     |                                                                                    |                                               |                                        |
| Spain           |                                                                                                                 | ✓ (Telefonica-Yoigo)                                |                                                                                    |                                               |                                        |
| Switzerland     |                                                                                                                 |                                                     |                                                                                    |                                               | ✓                                      |
| UK              | ✓                                                                                                               | ✓                                                   |                                                                                    | ✓                                             | ✓                                      |



## CMS' views

Spectrum sharing, and related secondary trading, still seems to be underutilized, largely due to the lack of clear regulatory conditions. Spectrum sharing could provide significant savings in a number of countries, and there is also almost a technical necessity to use it in certain frequency bands. However, we still see that almost all the competition and regulations authorities are either clearly against it or are reluctant to give a clear message to market participants on the conditions on which they are prepared to allow it.

Despite clear technical possibilities for operators to share the spectrum ranges, authorities still require operators to seek prior permission before doing so; and quite often regulators retain the right to revoke such approvals. Unclear conditions are not conducive to secondary trading or other efficient use of spectrum. Stronger cooperation between competition and communications authorities could also result in a greater take-up of network sharing.

As we can see, when EU authorities give voice to their concerns regarding certain types of network sharing (e.g. spectrum sharing, sharing of active infrastructure), they quite often cite the risk of decreases in network based competition. Understandably, it is very hard to reconcile the concept of network sharing and network based competition, because they are not consistent with each other. The major driver behind network sharing is making the network less expensive for operators to roll-out and operate. As long as network sharing is not restricted to infrastructural assets that are not considered to be "network equipment" (i.e. sites, power, air

conditioning, masts and other passive elements), then it certainly follows that sharing will reduce the number of network elements that otherwise would need to be duplicated. Therefore, the main question is not *whether* network sharing is supporting network based competition but *how* it is supporting it. When considering whether to support a certain form of sharing, an authority should, amongst other factors, give proper weight to how much it costs for the providers in that given market to obtain the necessary access rights to spectrum.

As early as 2008, regulators of Europe had been aware of the slowing of the growth in mobile markets. Since the early days of the rolling out of 4G, we have seen that Europe has been lagging behind,<sup>11</sup> in terms of the profitability of MVNO networks (if we compare ARPU), in LTE coverage and also in the proportion of LTE connections.<sup>12</sup> Although the well-developed markets of Japan and South Korea have always been better covered by 4G than Europe, based on the number of new LTE equipment installations commissioned, China is already named as a country "leading 4G compared to Europe".<sup>13</sup>

In light of the vast pressure on the operators as described previously, and in light of the lack of progress of EU member states in terms of 4G coverage (when compared to their peers), it could be time to give a new, more investment friendly meaning to network based competition. This could change soon following the most recent merger cases in Germany and Ireland where the EU Commission agreed to a reduced number of networks subject to certain remedies which support service based competition.

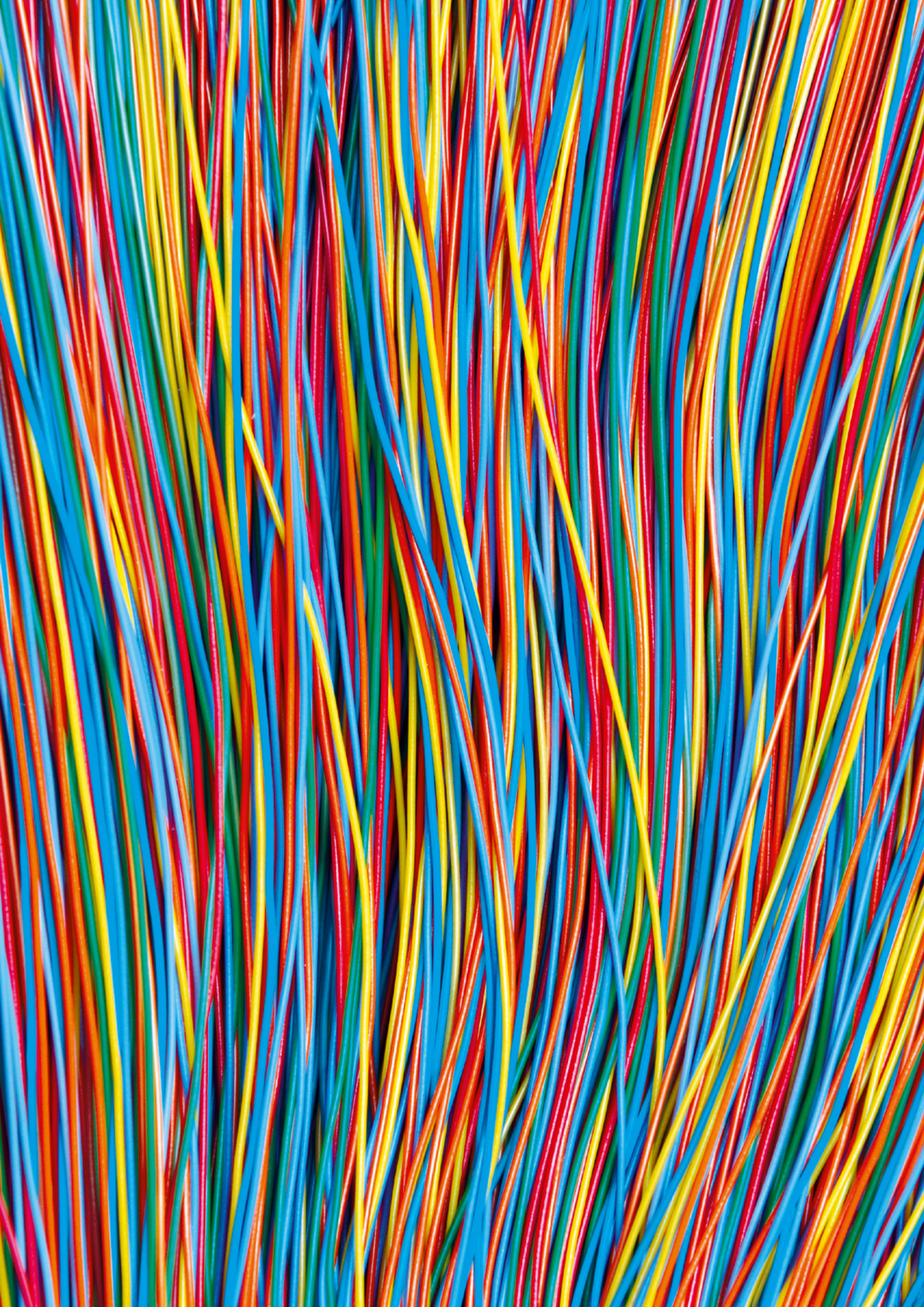
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<sup>11</sup> See GSMA's Mobile Economy Europe 2013 report, at [http://gsmamobileeconomyeurope.com/GSMA\\_Mobile%20Economy%20Europe\\_v9\\_WEB.pdf](http://gsmamobileeconomyeurope.com/GSMA_Mobile%20Economy%20Europe_v9_WEB.pdf)

<sup>12</sup> See Bohlin, Caves, Jeffrey: Mobile Wireless Performance in the EU & the US, May 2013, pages 19–20, published by GSMA at [http://www.gsmamobilewirelessperformance.com/GSMA\\_Mobile\\_Wireless\\_Performance\\_May2013.pdf](http://www.gsmamobilewirelessperformance.com/GSMA_Mobile_Wireless_Performance_May2013.pdf)

<sup>13</sup> Daniel Thomas: China speeds past Europe on 4G mobile rollout, 2 March 2014 at <http://www.ft.com/cms/s/0/6c82e78a-a082-11e3-a72c-00144feab7de.html#axzz32SVVwSgp>







# Individual notes for specific countries

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## 1. Albania

In 2011, the Albanian Competition Authority issued a Decision n. 210 (21 December 2011) recommending that before authorizing the merger between Albtelecom Sh. a. and Eagle Mobile Sh. a., the Electronic Communications Authority should request from each of the companies to separate their fixed and mobile accounting in order to ensure transparency in relation to the accounting data and clients of both merging companies.<sup>14</sup>

In this merger, the parties created a joint venture, sharing 2G and 3G passive elements and RAN.

It is also worth noting that in its Decision no. 275 (25 March 2013), the Albanian Competition Authority started a detailed investigation and market analyses procedure against Vodafone Albania Sh. a. to identify any possible restriction of competition in the mobile market.

## 2. Austria

In early 2012, T-Mobile Austria and Hutchinson 3G Austria (now “3 Austria”) agreed on a mutually beneficial network sharing in effect from July 2012. This enables T-Mobile Austria to offer 3G to its customers in rural areas, whereas 3 Austria will be able to access 2G networks of the other party.

As regards the regulatory background, it is important to mention that the regulatory authority, Telekom-Control-Commission has published a new position paper on infrastructure sharing in mobile networks (following the first such paper in 2002),<sup>15</sup> with serious reservations to when spectrum sharing could be allowed. It is also important to mention the 2013 multiband auction of 800–900 and 1,800 MHz, which ended with record proceeds for the Austrian state of EUR 2bn. The tender documents refer to the possibility of site sharing (according to the position paper) and an obligation to provide national roaming for new entrants in 900 MHz, 1,800 MHz and 2.1 GHz for six years after entering the market.<sup>16</sup>

## 3. Belgium

Although there were no mobile network sharing deals in 2013, the Authority published new guidelines for infrastructure sharing in January of 2012.<sup>17</sup> The guidelines strongly urge the operators to share sites (including some passive infrastructure like masts), but at the same time, with the same clarity, prohibit sharing of spectrum and even core network elements, because in the authority’s view, this would “deprive network operators of their competitive autonomy”.

In June 2013, the authority also held a new consultation on antenna site sharing, and is evaluating changes in the current legislation.

## 4. Bulgaria

There were no deals or regulatory changes in Bulgaria in the years surveyed.

## 5. China

Although no network sharing project among China’s three major MNOs (China Telecom, China Mobile and China Unicom) was signed or announced in 2013, it is interesting to note that the PRC Ministry of Industry and Information Technology has approved a pilot scheme which, for the first time, allows 11 privately-owned enterprises to re-sell products offered by the above MNOs under their own brands. Since these are considered as white-label MVNOs, we have not included them in the study. Needless to say, this could be a very interesting first step for further possibilities in the Chinese market.

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<sup>14</sup> <http://www.caa.gov.al/uploads/decisions/Vendimi%202010%20Rekomandime%20Albtelecom-%20Eagle.pdf>

<sup>15</sup> [https://www.rtr.at/en/tk/TKKPosition2011/27353\\_Position\\_Paper\\_TKK\\_Infrastructure\\_Sharing.pdf](https://www.rtr.at/en/tk/TKKPosition2011/27353_Position_Paper_TKK_Infrastructure_Sharing.pdf)

<sup>16</sup> [https://www.rtr.at/en/tk/multibandauktion\\_AU/27890\\_2013-03-26\\_F1\\_11\\_Tender\\_Document\\_Multiband\\_Auction\\_2013.pdf](https://www.rtr.at/en/tk/multibandauktion_AU/27890_2013-03-26_F1_11_Tender_Document_Multiband_Auction_2013.pdf)

<sup>17</sup> [http://www.bipt.be/public/files/en/680/3666\\_en\\_02\\_tech\\_infra\\_sharing\\_eng\\_final.pdf](http://www.bipt.be/public/files/en/680/3666_en_02_tech_infra_sharing_eng_final.pdf)

As regards the regulation of network sharing, a “Notification of particular interest” was issued jointly by the competent bodies in 2008 (PRC Ministry of Industry and Information Technology and the PRC State-owned Assets Supervision and Administration Commission) on “Promoting the Sharing and Co-construction of Telecommunications infrastructure”.<sup>18</sup>

With regard to spectrum, current regulation still requires the approval of the competent authority (PRC Radio Management Bureau) for any assignment or sublease or other similar secondary use of allocated radio frequencies.

Even if regulation of network sharing is not prevalent in China, we can see that rollout of new LTE infrastructure is very strong, with 200,000 base stations having been built by the launch of LTE in December 2013, which is said to be the same as the number of current LTE in Europe, and by the end of 2014, they expect that there will be 1,000,000 4G base stations.<sup>19</sup>

## 6. Croatia

The Croatian Post and Electronic Communications Agency reached a “Decision in market analysis procedure of voice call termination on individual mobile networks” (10 June 2013), imposing regulatory obligations of access to, and use of, special network facilities to mobile network operators with significant market power in this particular market, due to the fact that the agency, based on conducted market analyses, established that competition on the relevant market is insufficiently effective.<sup>20</sup>

With regard to spectrum sharing, a 2012 Government Ordinance (on requirements for granting the use of radiofrequency spectrum)<sup>21</sup> stipulates only that the licence holder may transfer or lease radiofrequency spectrum to another entity under the condition that the authority has given its prior approval.

## 7. Czech Republic

Telefónica Czech Republic and T-Mobile Czech Republic entered into a deal to share 3G and new 4G elements in 2013. T-Mobile agreed to serve the western half of the Czech Republic and Telefónica the eastern part of the country. Based on public announcements, the deal could save up to EUR 152m over the next 15 years for Telefónica Czech Republic.<sup>22</sup>

Czech Telecommunication Office (CTO) issued a statement supporting network sharing since it expects that the savings thus made will be invested in infrastructure for end-users. This statement was issued in cooperation and based on discussions with the Czech Office for Protection of Competition. However, due to the fact that the third operator was not involved, it cannot be ruled out that Vodafone might later take legal action against the network sharing.

## 8. France

A transaction deal was negotiated in 2013 between SFR (Vivendi’s mobile unit, the second largest French mobile phone company) and Bouygues for sharing of their networks. This deal was signed at the start of 2014. According to news sources, the network sharing agreement will affect a very large part of the country and more than half the population, but covers only networks in cities in France with less than 200,000 inhabitants, and at the same time it will exclude the “white zone” (which are zones with very low population density). In April 2014 Orange filed a complaint before the French Competition Authority to challenge this deal. It is also worth noting that Bouygues Telecom is currently “on sale” and this may have an impact on the agreement signed with the SFR.

These details are in line with the criteria which the competition authority set out in March 2013 as to where it sees competitive advantages for network sharing (rural

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<sup>18</sup> <http://tech.sina.com.cn/t/2008-10-07/07492492053.shtml>

<sup>19</sup> See footnote 12.

<sup>20</sup> [http://www.hakom.hr/UserDocsImages/2013/odluke\\_rjesenja\\_presude/ODLUKA%20M7%20AT%20terminacija%20poziva%20u%20PM%2020130610.pdf](http://www.hakom.hr/UserDocsImages/2013/odluke_rjesenja_presude/ODLUKA%20M7%20AT%20terminacija%20poziva%20u%20PM%2020130610.pdf) in Croatian

<sup>21</sup> [http://narodne-novine.nn.hr/clanci/sluzbeni/2012\\_04\\_45\\_1134.html](http://narodne-novine.nn.hr/clanci/sluzbeni/2012_04_45_1134.html), in Croatian

<sup>22</sup> <http://www.reuters.com/article/2013/08/06/czech-telefonica-vodafone-idUSL6N0G71LQ20130806>

areas, passive elements) and where it does not (urban territories, spectrum and active element sharing).

In the meantime, new entrant Iliad also tried to become party to this agreement, but so far without any success. Iliad is operating based on a roaming agreement with Orange until at least 2016. However, the future of the roaming agreement beyond that point could also be subject to the competent authorities' decision: do they still see national roaming as serving the interest of network based competition? The authority already stated that the maximum duration is limited to 2018.

## 9. Germany

In 2013, news sources reported that Telefónica and KPN were in talks for sharing German networks (O<sub>2</sub> Germany and E-Plus). These plans have been abandoned and at a later stage both companies agreed to merge their German business.

As regards regulation, BNetzA's guidelines on infrastructure sharing principles (which BNetzA published as interpretation of the UMTS license award conditions), were last updated in 2010.<sup>23</sup> In relation to sharing spectrum, any attempts at spectrum pooling must be discussed with BNetzA and the competition authorities in advance and on a case-by-case basis.

## 10. Hungary

There were no deals or regulatory changes in Hungary in the years within the scope of this study. There are no publications or guidances issued by the electronic communications or competition authorities that consider network sharing agreements.

## 11. Italy

In Italy several agreements for site sharing (passive network sharing) between mobile telephony operators are in place: Vodafone has agreements in place with Wind, Telecom Italia and H3G; Telecom Italia has an agreement in place with H3G.

There were no significant regulatory changes in the years surveyed.

## 12. The Netherlands

A deal was announced in August 2013 between Tele2 and T-Mobile in the Netherlands for network sharing. Sharing will be at all levels of the network, excluding only transmitters. Tele2 and T-Mobile operate on different frequencies, so spectrum sharing is not part of the deal. The deal was aimed at providing sharing for 4G, but the deal also covers 2G–3G sharing in case of a service outage at 4G.

Assets will mainly be provided by T-Mobile.

With regard to spectrum sharing, the auction rules defined in the multi frequency auction in 2012 are still effective: network sharing is allowed on the basis of an agreement between a licence holder of a certain frequency range and the operator of a transmitter. Licence holders are subject to certain roll-out obligations (territorial coverage) and sharing of network (elements) is allowed to comply with these roll-out obligations (in principle a certain frequency range can only be allocated once).

The authority's last guidance with regard to network sharing was published back in 2001.

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<sup>23</sup> Notice 458/2010 dated 11 August 2010, joint use of radio frequency infrastructures and frequency resources, BNetzA OJ 15/2010, [http://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Telekommunikation/Unternehmen\\_Institutionen/Frequenzen/Entscheidungen/InfrastructureSharing.pdf?\\_\\_blob=publicationFile&v=2](http://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Telekommunikation/Unternehmen_Institutionen/Frequenzen/Entscheidungen/InfrastructureSharing.pdf?__blob=publicationFile&v=2)



### 13. Poland

In 2013, opportunities for the provision of LTE services opened for T-Mobile Poland, who had previously created a joint venture with Orange (NetWorkSI!) for network sharing: they entered into the agreement on 13 September 2011 for 15 years, with clearance from the competition authority.

Also, on 30 December 2013, the President of the Office for Electronic Communications published on its website a statement in which she encouraged the operators to share their infrastructure and frequencies.<sup>24</sup>

### 14. Portugal

In relation to the approved merger of Zon Multimedia (cable TV operator) and Sonaecom's mobile phone unit, Optimus, the competition authority confirmed the requirement that Optimus must remain in a network-sharing deal with the Portuguese unit of Vodafone.

### 15. Romania

In 2013, Orange Romania and Vodafone Romania, the two largest operators on the national market by number of clients and revenue, entered into a 16-year network sharing agreement, resulting in the creation of a joint venture. Under the agreement, different sharing models are to be implemented depending on geography (passive elements and RAN sharing). The two operators declared that the efficiencies created by the deal will allow to invest in expanding LTE footprint as well as in covering the "not-spots" areas in rural regions. The deal builds on the previous practice by which the two operators already shared cell sites.

In June 2014 the Romanian competition authority published a set of Guidelines for consultation laying down the general framework for the analysis of potential competition issues which may arise in connection with mobile network sharing agreements.<sup>25</sup>

### 16. Russia

As detailed in the overview charts on pages 8/9 and 13, on 6 February 2014 a Tele2 and Rostelecom network sharing deal was announced with the approval of the Federal Antitrust Service, and is highly extensive, covering even core network elements. After a two-stage integration process, practically all Rostelecom assets in the area will be transferred to the joint venture (except for certain CDMA frequencies).

In Russia network sharing arrangements are subject, in broad terms, to clearance by the antitrust authority if they are structured as a transaction caught by the relevant competition law requirements and/or relate to the activities of natural monopolies.

Network sharing is currently still in a formative stage, with many legal and regulatory provisions being a hurdle to further development. The Ministry of Communications and Mass Media of the Russian Federation introduced certain amendments relating to RAN sharing in 2012 and is working on additional amendments concerning LTE and GSM RAN sharing. Amendments to the Federal Law On Communication concerning spectrum sharing are also under discussion.

### 17. Serbia

The three major mobile operators (state-owned incumbent Telekom Srbija, and privately owned operators VIP Mobile and Telenor) have thus far mostly been active on the market in terms of construction of their own infrastructure. As a rule, at the time of the two private players' market entry agreements on collocation were concluded between the new entrant and the incumbent, but these were of minor significance.

Recent developments on the Serbian market indicate the existence of the first MVNO arrangement between VIP Mobile and SBB (Major internet/TV cable operator) concerning the usage of VIP Mobile's network by SBB as a virtual mobile operator. The deal was reached in May 2013, but this is more a white-label MVNO agreement, falling outside the scope of our study.

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<sup>24</sup> <http://www.uke.gov.pl/opinia-prezesa-uke-w-sprawie-wspolpracy-operatorow-wspoldzielenia-infrastruktury-oraz-czestotliwosci-13232>

<sup>25</sup> [http://www.consiliulconcurentei.ro/uploads/docs/items/id9167/2014-06-11\\_orientari\\_privind\\_compatibilizarea\\_mobile\\_network\\_sharing\\_agreements\\_cu\\_prevederile\\_legii\\_concurentei.pdf](http://www.consiliulconcurentei.ro/uploads/docs/items/id9167/2014-06-11_orientari_privind_compatibilizarea_mobile_network_sharing_agreements_cu_prevederile_legii_concurentei.pdf)

## 18. Slovakia

There were no deals or regulatory changes in Slovakia in the years surveyed.

## 19. Slovenia

In Slovenia, the deals presented in the table are all MVNO deals, but we have not included the Debitel MVNO agreement, as this is a white-label MVNO deal and, as such, is excluded from the scope of our study (see “Overview of network sharing deals”, page 7).

There were no regulatory changes in Slovenia in the years surveyed.

## 20. Spain

In Spain, in August 2013, Telefónica and Yoigo entered into a network sharing agreement, by which Telefónica will be entitled to use Yoigo’s newly acquired 4G spectrum, and Yoigo will be able to use Telefónica’s 2G and 3G network. Both parties have sold existing mobile towers to an infrastructure company called Abertis.

Spain’s competition authority has started an investigation into the deal. However, despite the request of their competitors Vodafone and Orange, the authority has not suspended the network agreement until the investigation was concluded.

## 21. Switzerland

There were no deals or regulatory changes in Switzerland in the years surveyed.

## 22. United Kingdom

The O<sub>2</sub> and Vodafone deal in the UK was announced on 1 October 2012, following clearance from the UK Office of Fair Trading. This deal covers passive and RAN sharing and 2G–4G as well. The EE (a joint venture itself by T-Mobile and Orange previously formed in 2010) and Three deal, covering 4G network elements only, was announced on 4 February 2014.

Regarding regulatory developments, it is worth noting that a new code of best practice on mobile phone network development in England was published by the Mobile Operators Association (MOA).<sup>26</sup> The MOA is a working group representing industry, local authority groups and other interested parties. The Code aims to ensure that the government’s objective of supporting high quality communications infrastructure is achieved without delay, that the potential impact of such development is minimised and that appropriate engagement takes place with local communities and other interested parties. It provides guidance on mobile network development to mobile network operators, their agents and contractors and to local planning authorities.

On the spectrum front, Ofcom issued a statement on spectrum management approach in the 70/80 GHz bands.<sup>27</sup> Ofcom reassessed its management approach for these bands in order to meet fixed-link requirements for 4G backhaul. Following a consultation in August 2013, Ofcom has decided to implement a mixed management approach whereby separate frequency allotments are made to the current self-coordinated approach and a new Ofcom coordinated approach. There is also a currently ongoing consultation at Ofcom on the future role of spectrum sharing for mobile and wireless data services (“Licensed sharing, Wi-Fi, and dynamic spectrum access”).<sup>28</sup>

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<sup>26</sup> [http://www.mobilemastinfo.com/images/stories/2013\\_Code\\_of\\_best\\_practice/Code\\_of\\_Best\\_Practice\\_on\\_Mobile\\_Network\\_Development\\_-\\_Published\\_24-07-2013.pdf](http://www.mobilemastinfo.com/images/stories/2013_Code_of_best_practice/Code_of_Best_Practice_on_Mobile_Network_Development_-_Published_24-07-2013.pdf)

<sup>27</sup> <http://stakeholders.ofcom.org.uk/consultations/70-80ghz-review/statement>

<sup>28</sup> <http://stakeholders.ofcom.org.uk/consultations/spectrum-sharing>





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