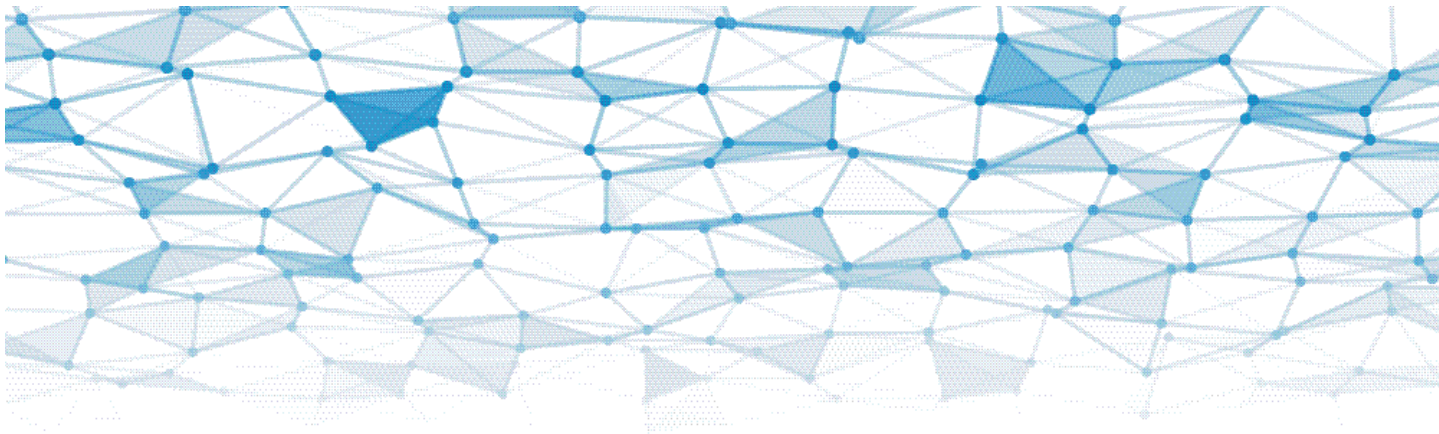# IV Conference on Competition and Regulation in the Telecommunications Market

5G Deployment Across Europe & EU Digital Future

September 22, 2021

IESE Business School
University of Navarra

Public-Private Sector Research Center

Acknowledgements

This document summarizes presentations of speakers during the IV Conference on Competition and Regulation in the Telecommunications Market held online on September 22, 2021.

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1. 5G Deployment across Europe

KRZYSZTOF KUIK[1]
Head of Unit, State Aid
DG COMPETITION, European Commission

The topic for today is 5G and state aid. I would take a step back and think about what is happening in terms of support of broadband rollouts of infrastructure that allows us to make use of the novel (maybe not these days), necessary, Internet-based services. I think in that regard, we have seen that as the market develops (it developed and continues developing primarily through private investments) we assume, or we estimate, that 80% of investment in broadband rollout is privately financed. There are areas, there are situations, where the rollout is not taking place without a degree of public intervention. Our practice, which then evolved in a set of guidelines , the most recent guidelines[2]dating back to 2013[3], focused on fixed broadband rollouts.

There have been hundreds of cases we have dealt with over the years. I should only mention the most recent ones dealing with high-speed type of rollouts, rollouts that lead to higher capacity networks. Such schemes were notified by Italy, France, Spain and Germany, and in all these cases, we applied a case-by-case approach. So, regarding the last schemes, the specific exemptions that we have that allow the Member States to take responsibility for the application of state aid rules, don't apply[4].

Large schemes come to us, and we assess them[5]. The latest decision concerning fixed broadband rollouts dates back to last year. It is very recent, it concerned a €6 billion scheme in Germany, €6 billion public funding, €6 billion co-funding to the scheme. So, it was a major program to rollout gigabit networks in Germany. And just this May, before the summer, we also approved a German scheme concerning mobile rollouts. It's an important precedent for us because, following a series of regional schemes, it's the first decision, a countrywide decision, concerning support for mobile rollouts.

Now, why are we talking about support for mobile rollouts? I think that it is something that evolved over time. The first point I would like to make is that, as the rollouts happened for different generations of mobile services and underlying infrastructure, we have seen that there are gaps in the coverage. There are areas where private investments are not going. So, following the logic of fixed rollouts in those areas, there is a good case for public intervention. And that's what we've done in those German cases. The rollouts, the public intervention in those cases is not without some kind of conditions, and there are typical conditions of organizing it, then properly structuring. As a question of appropriate rules for access, these investments also concern passive infrastructure, and I should also add that they don't count. So, the coverage obtained as a result of such investments does not count against the current or future coverage obligations, which are in that part of the legal obligations that the operators have.

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[1] Mr. Kuik spoke in a personal capacity, thus the views expressed were purely those of the speaker and do not necessarily reflect the views of the European Commission.

[2] In reference to the EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks. Guidelines can be retrieved at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:025:0001:0026:en:PDF

[3] In reference to the Broadband State Aid Guidelines, which aim at facilitating Member States in the deployment and take-up of broadband networks in areas suffering from insufficient connectivity services (remote and less populated regions of the EU). More about them: https://ec.europa.eu/commission/presscorner/detail/en/ip_21_6049

[4] Notified EU State aid control requires prior notification of all new aid measures to the Commission. Member States must wait for the Commission's decision before they can put the measure into effect. There are a few exceptions to mandatory notification, for example: aid covered by a Block Exemption (giving automatic approval for a range of aid measures defined by the Commission); de minimis aid not exceeding €200,000 per undertaking over any period of 3 fiscal years (€100,000 in the road transport sector); or aid granted under an aid scheme already authorized by the Commission.
Source: https://ec.europa.eu/regional_policy/sources/conferences/state-aid/broadband_rulesexplained.pdf

[5] A company receiving government support may gain a distortive advantage over its competitors. Therefore, Article 107 TFEU generally prohibits State aid unless exceptionally justified.

Now, that's the past. I think also about the future. And the big part of the future is the rollout, as we got a fixed network of very high-capacity networks to bridge the digital divide. As you know, we are talking now about the rollout of gigabit networks until 2030 as the objective of the Digital Compass. Also, about coverage of all populated areas with 5G. We see countries that, taking the example of Germany, are actually identifying a similar situation themselves and plugging the gaps in their coverage. On top of those, in what I would call "white spots," we also have the other situations. We also have funding for certain European priority projects, set out in the European programs, a notable one being the 5G corridors[6]. And we also look at them from the state aid perspective with regards to the cross-border sections of such corridors.

There are also discussions in some countries, and I believe that these discussions are also taking place in Spain, in terms of the support of rollout beyond coverage obligations. The coverage obligations can go up to 80, 90%. We know from the history of previous ones, that it is a path where operators are less likely to go. Is there a case of, in a sense, front loading the development of these areas by providing coverage and supporting it with state aid? We are looking at this and we had a very intense experience across all Member States when we dealt with the Recovery and Resilience Facility[7]. And we, as part of the condition also, are taking part in the approval of the Recovery and Resiliency Plans presented to us by Member States and now are engaged in making sure that these plans are properly executed.

If we look at the development of the infrastructure market in telecoms, we see that it is primarily led by private funding. There is in certain justified cases, a need for state aid or public funding. And, under the rules set out in the treaty[8], state aid assessment is the Commission's responsibility[9], unless specific conditions apply. (…) I'll just say that in certain cases we don't have aid, the notion of aid is a specific and legal notion. In other cases, exemptions in the general block, exemption regulation can apply. In some cases, the funding can already fall under the approved scheme and then no new notification is needed. But otherwise, the scheme has to come, the public authorities, the government has to notify the scheme to the European Commission and await the approval. I think Alexandra also will go into more details in the way that we're already trying to facilitate the development of broadband infrastructure, which includes both fixed and, for the first time, also mobile networks. And in mid-July, we adopted the amendments to the General Block Exemption Regulation (GBER)[10], we as the Commission. And that Block Exemption Regulation also for the first time, specifically addresses the possibility of rolling out public funding mobile rollouts.

Finally, as part of my introduction, I would mention that we are working now in the framework of the 2013 broadband guidelines. They date back to 2013 and many things have changed. I think we moved in terms of both, thinking about the targets and what we expect to be needed by consumers in the future. Already for some time, we have been thinking about whether these rules still fit for purpose and are up to date. We conducted a specific study to look at the application of the rules to the past schemes, which was

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[6] "5G corridor" means a transport path, road, railway or inland waterway, fully covered with digital connectivity infrastructure, in particular 5G systems, and enabling the uninterrupted provision of synergy digital services as defined in Regulation (EU) 2021/1153 of the European Parliament and of the Council, such as connected and automated mobility, similar smart mobility services for railways or digital connectivity on inland waterways.
Definition taken from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R1237&qid=1627885253480
[7] The Recovery and Resilience Facility is a funding instrument that is closely aligned with the Commission's priorities ensuring a sustainable and inclusive recovery that promotes the green and digital transitions.
More information: https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en
[8] In reference to the Treaty on the Functioning of the European Union (TFUE).
[9] The Commission is responsible for enforcing EU State aid rules. In doing so, they carry out an assessment of public support to broadband deployment projects on the basis of the "Broadband Guidelines."
More information: https://ec.europa.eu/regional_policy/sources/conferences/state-aid/broadband_rulesexplained.pdf
[10] General Block Exemption Regulation (GBER). Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the treaty.
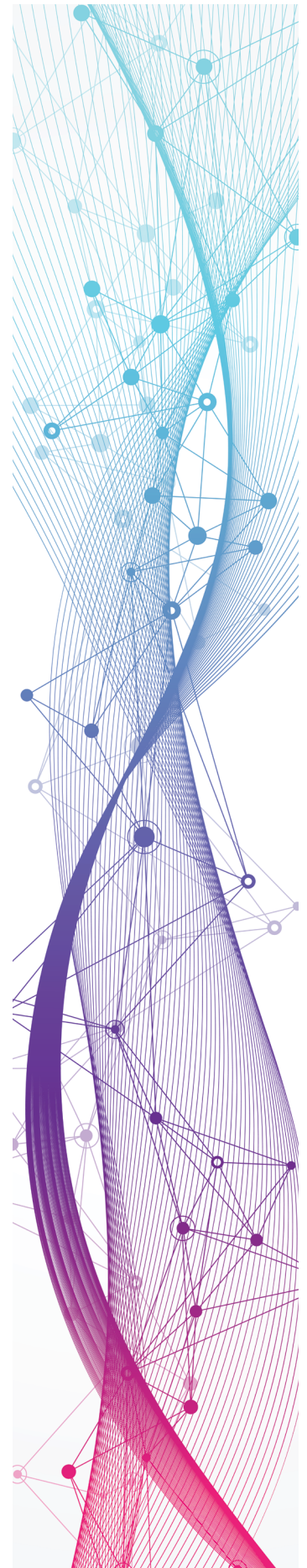
concluded last year. We also evaluated the guidelines and concluded the evaluation of the guidelines this year. The results of the evaluation are publicly available. Not to be overconfident, but I think the feedback we got generally from the public authorities, private operators, different stakeholders was quite clear that first, the guidelines are needed and second, are effective.

They provide a clear framework to facilitate the development of broadband infrastructure. In their absence, there would be much less clarity and legal uncertainty, both for the market and for public authorities. Second, certain key concepts that we apply in the guidelines are still up to date. I mean, one of the basic concepts that we have is that there is a difference, in terms of public funding, between one network providing a certain level of performance or many networks providing that level of performance. That is what we refer to as different colors of areas: white, gray and black. I think that has been confirmed. Other notions like the notion of step change. So if you invest in a new network, that needs to be a marked improvement, in terms of performance quality, etc. The notion of selection procedures, in order to select the operator or the beneficiary of aid, and the notion of open access have been fully confirmed. But it's been also quite clear that the guidelines are from 2013, so there is room for further adjustments and improvements. We thought about this and decided that there is a need for a targeted revision of the guidelines. We developed a roadmap and we consulted on the roadmap before the summit. The deadline for consultation was last week. Already on this very basic information, we received a number of submissions from operators, public authorities and associations. So, that's a sign of a big interest in the revision of the guidelines.

I should also add that one of the things that we considered in that context is the fact that we already have decisions on mobile rollouts: the fact that there is support for mobile rollouts which may be contemplated by the Member States or as part of the European projects. That is something that pleads for including also some rules on rollouts in the guidelines. Now, in terms of the main steps for the revision, there is very little that I can put in right now. But what we definitely see is that in the autumn we would like to do a consultation of a document which is more detailed, concluded by the end of the year. Should things work properly, certainly, we would like to adopt it in 2022, in terms of the new version of the guidelines. With that, I will pass the floor to Alexandra to provide you with a little bit of meat on these bare bones that I presented. Thank you very much.

ALEXANDRA MANAILA[11]
Deputy Director of the State Aid Unit
DG COMPETITION, European Commission

I will try to walk you through the main concepts that we rely on in state aid control. I'm happy to discuss questions that may arise. As Krzysztof has explained, in the broadband sector, private investment is significant. State aid can play a role to address identified market failures, to bridge the digital divide. Though it's typically aimed at rural areas, remote areas that do not benefit from the necessary connectivity, state aid control aims to minimize distortions of competition, the internal market, which would arise if the public spending results in an advantage that would be conferred on a selective basis to only certain undertakings or one undertaking. It avoids crowding out private investors, which could happen if the public intervention exceeds what is necessary and proportional to address the identified market failure.

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[11] Ms. Manaila spoke in her personal capacity thus the views expressed were purely those of the speaker and do not necessarily reflect the views of the European Commission.

Member States are in the driving seat in the State aid frame. They are expected to ensure that all investments involving State aid comply with the State aid rules and procedures. Not all investments, not all public support, amounts to State aid. There are circumstances under which State aid may be excluded. For instance, if it doesn't aim to support an economic activity or if there are no State resources involved, or the measure is not selective. For instance, an information campaign that is addressed to all and is open; the results of the survey of consumers for instance are open to all consumers. There might be no advantage granted because the intervention of the State might be compliant with what we call in State aid, the Market Economy Operator Principle[12], so that the State acts as a private investor would. There might be also no effect on trade or no distortion of competition. When State aid is present, not all State aid is notifiable. Some State aid might be exempted from notification[13], those contained in the General Block Exemption Regulation (GBER), but also there are other circumstances. In other cases, of course, if there is State aid and it doesn't fit with the rules for exemptions from notification, then it should be notified. And this is where we have careful assessment by the Commission.

To briefly recall what Krzysztof has said about the General Block Exemption Regulation, which was recently revised in July: it was revised to accompany the Multi-annual Financial Framework. And this has given the opportunity to expand the scope of exemptions provided for in the General Block Exemption Regulation for the different types of interventions as well as increase the notification thresholds for grants. A novelty for financial instruments is that there are new provisions in the GBER that concern fixed broadband networks, but also mobile networks, 4G and 5G mobile networks. There are provisions that concern projects of common interest in the area of transfer European digital connectivity infrastructure. There are also provisions, also a novelty, that concern certain connectivity vouchers. So, these are demand-side measures as opposed to more traditional supply-side measures. There are provisions that concern InvestEU aid[14]. And finally, there are also provisions that concern the digitalization of buildings to increase smart readiness.

In terms of provisions concerning mobile networks in the GBER, the most important one is contained in Article 52A[15] which concerns 4G and 5G rollout, which can be supported where there is a market failure. The underlying assumption of the GBER is that such a market failure would be present where there is no 3G network present or planned for foreign investment in 4G networks; and for investment in 5G, that this requirement is there, that there is no 4G network present and planned. As Krzysztof has said, a crucial element is that the aided network cannot count towards meeting coverage obligations that operators, beneficiary operators in this case, might have under licenses. And there is also an important note that under the GBER only passive networks can be supported. This is in line with the recent case practice concerning mobile networks that Krzysztof has already evoked.

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[12] The essence of the MEOP/MEIP is that when a public authority invests in an enterprise on terms and in conditions which would be acceptable to a private investor operating under normal market economy conditions, the investment is not State aid. Taken from: https://ec.europa.eu/competition/publications/cpn/2002_2_23.pdf

[13] As a general rule, State aid must be notified to and cleared by the Commission before it is granted. The General Block Exemption Regulation (hereafter the GBER) exempts Member States from this notification obligation, as long as all the GBER criteria are fulfilled. The GBER simplifies the procedure for aid-granting authorities at national, regional and local level. More information at: https://ec.europa.eu/competition/state_aid/legislation/practical_guide_gber_en.pdf

[14] The InvestEU Programme will bring together the European Fund for Strategic Investments and 13 other EU financial instruments. It supports the following four main policy areas: sustainable infrastructure (which includes digital connectivity and access including in rural areas) research, innovation and digitization, SMEs and social investment and skills. More information: https://europa.eu/investeu/about-investeu/what-investeu-programme_en
Triggering more than €372 billion in additional investment over the period 2021-27, the InvestEU Programme aims to give an additional boost to sustainable investment, innovation and job creation in Europe.

[15] Article 52a of the GBER regards aid for 4G and 5G mobile networks. Full article: https://lexparency.org/eu/32014R0651/ART_52/
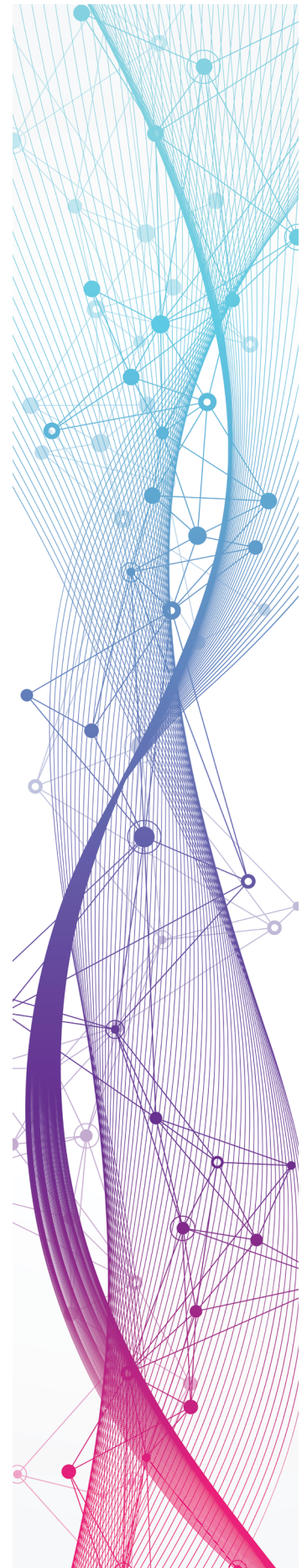
There are further provisions that might be of interest in the GBER. Article 52B[16] contains provisions concerning projects of common interests supported by the Connecting Europe Facility program[17]. There are provisions which concern cross-border sections of 5G corridors[18] that go along the corridors, which cannot exceed a total of 15% of the total length of the 5G corridors in that Member State. You might also consider interesting the provisions of the GBER regarding certain connectivity vouchers for citizens for e-learning and online training. We know that these are all the more important in the current situation and also for SMEs[19]. So, this concerns citizens' new subscriptions or upgrades to at least 30 megabits download, whereas for SMEs, its new subscriptions and upgrades to at least 100 megabits download. Such vouchers may cover up to 50% of the total costs of set-up and the monthly subscription fee, and must ensure technological neutrality, meaning that any technology that is able to support these speeds must be eligible for the vouchers[20]. This is just an overview of the provisions of the GBER.

As Krzysztof has mentioned, there is an ongoing process of evaluation and foreseeing a revision of the broadband guidelines. This process is based on the conclusions of the evaluation of the 2013 guidelines, which has shown that, overall, until now the programme guidelines have been effective and have provided a clear framework to facilitate the deployment of broadband infrastructure. The key concepts and principles remain relevant. A targeted revision is foreseen to take into account recent technological developments and the public consultation on the new broadband guidelines we expect would start in autumn this year, with a view to have the guidelines adopted in 2022. But I think I see questions are coming already. So perhaps I will stop here for questions.

Questions raised by the audience:

- **Although previously it has already been stated by the EC that the mobile rollout tended to be fulfilled by private investments, and while mobile will not be considered, within State aid. What is the easy approach for mobile market value under which aid would be granted? And what is the approach of market failure in general, considering the very high capacity networks (VHCN)?**

  According to BERIC market, does not have fixed and mobile, but the VHCN, which will yield certain performance. Would that mean that when applying the neutrality principle, both fixed and mobile will be equally considered within the tender process? Or should we envisage still a differentiator in the cases that fixed would be predominant?

Alexandra Manaila: Thank you for the very interesting question.

The concept of market failure starts from the assessment of consumer needs. It can be then taken into account that consumers may also have mobility needs that cannot be met, strictly speaking, by a fixed network. And this has been considered in the Commission's case practice until now. For instance, we know that it is important to be able to benefit

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from connectivity while on the move, hiking in the mountains and so on. Even if it is, to give a very standard example, to have access to emergency services. So this notion that market failure can take into account mobility needs is already anchored in case practice. We have also treated in the GBER, fixed networks and mobile networks separately, in separate articles taking into account that there might be this specific approach. Now, there are situations where the mobile network, let's say a 5G network, constructed to meet certain standards, might also be used to provide fixed wireless access services. In that sense, those would be fixed services and then there is a certain degree of overlap. So, for the provision of fixed wireless services, the consideration of market failure must also take into account, the existence of other fixed networks present or planned. If this is envisaged and this is also foreseen in the GBER and it is also anchored in how we have approached the cases until now. So, we do acknowledge that mobile technologies can be used to provide fixed wireless access. It depends on the speeds and performances that can be provided and it depends, of course, on the level of market failure that is in a certain region. Can the new 5G fixed wireless access network actually deliver sufficient performance to meet the market failure and ensure a step change? A step change compared to the current and planned networks, meaning a significant improvement.

- **There are other types of market failure. For example, it could be that, in the development of 5G, the market is covered but it seems there will be different levels of quality or investment. So it is not covered optimally; the investment, let's say, is too little. There is some coverage, but the level of investment and therefore the quality of the network is considered sub-optimal. So, would this qualify? Or do you think of market value in this sense?**

Alexandra Manaila: It depends. Again, it depends on what we mean by covered optimally and covered sub-optimally. Again, it comes down to consumers' needs and if there are unmet consumers' needs, or if they need a certain level of performance. And if it is demonstrated that this level of performance is needed and it's not being provided by the current networks, then we can analyze whether there is a market failure. It is not set in stone. We take into account all the conditions that might exist in a specific case and with the circumstances that may vary among Member States, among regions in Member States. There are various considerations to take into account.

- **Xavier V: Regarding Next Generation funds, now several countries will inject money into digitalization and maybe into 5G expansion. Do you envision tension with the state aid rules or do you envision any specific area where there can be a tension or how do you perceive this? Because this is maybe a different; it's like a change. No, There is a lot of money going into digitalization, and part of it, not all obviously, but a good chunk of it, will be public money.**

Alexandra Manaila: We do not foresee tension with state aid. And it has been clear from the start that the RRF may amount to state aid and where state aid is involved, the state aid rules will have to be respected. In all our exchanges with Member States, we know that Member States are making all efforts to ensure that on investments where they do involve state aid, that it will be state aid compliant, and our discussions are ongoing. I cannot discuss the concrete cases that we're looking at. It's an ongoing process. We're happy to look at the notifications that will come and are coming from the Member States.
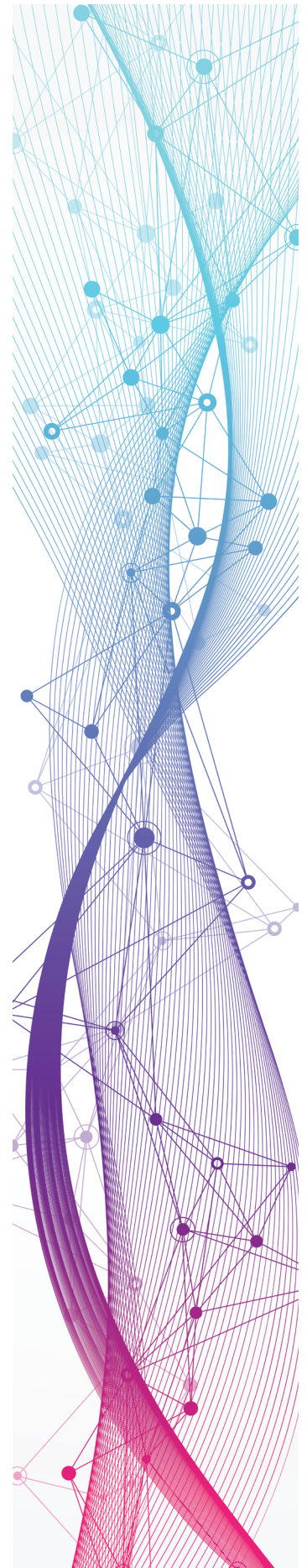
2. Roundtable: Using European Funds to achieve 5G coverage

Moderator:

ÍÑIGO HERGUERA

Professor at Instituto Complutense de Análisis Económico (ICAE) at Universidad Complutense de Madrid.

To deal further on the topic that has been presented previously, which is how to use European funds in order to achieve 5G coverage and the usage of it, the big broad question that I would like to bring to you is: what kind of policy mix do we have in Europe? Is it working or not? With a special emphasis on the European Next Generation funds, a resilience fund and of course, focusing on 5G. We may touch upon fixed infrastructure as well, but we are mainly focusing here on 5G. Let me add just a 20-second context to this.

In Europe, even though we are not leaders in 5G, it seems like it is true that many things have been done. For example, there has been a lot of coordination and putting available spectrum bands: low bands, mid bands, high bands. Most of the countries have already assigned (…) for commercial use, the mid bands. We have the technological neutrality principle, which seems to be very useful in the sense that each operator is free to reform, to reuse any band that it may have already for any kind of technology that he may think of, for example, 5G. Now we have this possibility of the Next Generation funds.

The European Code for Electronic Communications of 2018 gives to all the operators an incredible amount of flexibility in order to design their strategy of deployment and of usage of base stations and the active parts of mobile infrastructures. And, actually, this is working. There is a lot of network sharing through many types of agreements all across Europe, not only wholesale operators, as we have here one, American Towers. Hence, what I mean is, we have a whole set of instruments already in place. Some may be working better than others, of course, and this regards to the question I would like to ask to you: **Do we need special subsidies or support programmes for 5G deployment, most likely in the areas where the private interest is not as clear?**

ANNA MERINO-CASTELLÓ

Director Strategy & Economics at PwC Spain

The digital compass aims to achieve the digital transformation of our society and economy by 2030, offering 5G connectivity to all populated areas. This is important because we need connectivity – 100% coverage in urban, rural, and remote regions. In fact, the instrument of Next Generation funds, more particularly, the Recovery and Resilience Facility, will help all of us on that purpose and will permit the scale and the intensity that is necessary to achieve a successful digital transformation, allowing the disappearance of the digital gap, and to achieve that transition towards the climate-neutral, circular or resilient economy. Of course, in this scenario, each Member State will receive a huge amount of money to develop their own 5G roadmaps. But, as Krzysztof and Alexandra said before, it is important to note this, that most of these public funds will be oriented to foster 5G connectivity mainly in rural areas, where private operators have no incentives to invest in passive infrastructure neither in active networks because of low demand nor because of low profitability. Of course, here we can say that there is market failure.

Before 5G and Next Generation funds, we had that 2013 Broadband State aid Guidelines, that of course, could give all Member States clear criteria to make aids compatible with the common market in case there exists a market failure in rural areas. For example, all of us know that the purpose of State aid control in the broadband sector is to ensure that State aid measures will result in a higher level or a faster rate of broadband coverage and penetration. In this sense, where there isn't State aid, it must be an incentive effect. This is one of the most important things of the public case, incentive effect. In particular, we know that the Broadband Guidelines allow public investments where a market failure exists and where these investments would mean a significant improvement to the market in terms of services, capabilities, speed, competition, whatever. What is important is to obtain a common benefit, a common interest, in this case, 100% coverage and increase of competitiveness of all the countries, of all the industries, etc.

Moreover, we have another instrument, the General Block Exemption Regulation, that exempts Member States from having to notify a measure supporting the deployment of broadband networks, mainly in concrete areas where certain conditions are met. However, as Krzysztof and Alexandra told us, since that moment, broadband technologies have significantly improved. We have now the 5G challenge and users require an improvement of the networks in terms of latency, availability, reliability, etc. In fact, this technological or market change was the main reason for the European Commission or DGComp to launch a public consultation in September 2020, regarding the State aid rules for the deployment of broadband networks. After several months of work in July 2021, the Commission in the working document concluded that, overall, the rules, the actual rules that we have, the GBER and the Broadband State aid Guidelines etc. are fit for purpose more or less, and in their own words, some targeted adjustments are needed. In particular, the Broadband Guidelines should be adapted to reflect on recent developments, current priorities, as well as market and technology developments. So this statement is quite important because we know, as Krzysztof and Alexandra told us, that they are talking, they are working on this new Broadband State aid Guidelines. And I think it is important to work quite fast because otherwise problems start appearing. In fact, nowadays, we have right now a problem in Spain regarding this topic. We don't have new guidelines to roll out 5G. Concretely, to roll out 5G in rural and remote areas in Spain, the Spanish government has carried out after-market tests and an expression of interest to subsidize, probably through Next Generation funds, not only passive infrastructure, but also part of the active equipment or active networks, namely in those municipalities with less than 20,000 inhabitants. Otherwise, it seems that private operators will not be engaged in increasing connectivity in "la España vaciada"[21] because of a lack of demand and profitability. So it is probable that private investors will not have enough interest in investing in this type of technology.

In this sense, the plan of the Spanish government to extend 5G coverage to these less inhabited areas consists of the award of public aid for the passive infrastructure and also for the active network, for the installation of electronic private equipment and antennas that emit and receive 5G signals. Otherwise, it would make no sense to spend public funds on passive infrastructures if no operators take profit of them by giving services to final clients and they need money for that. However, we know, and all of you know, that subsidy is finding difficulties from the European Commission to obtain the green light. At the end of August, Spain received a negative answer from DGComp, which considers that those municipalities of 20,000 or 15,000 or 10,000 inhabitants are still large enough to be naturally attractive for private operators to deploy 5G networks without subsidy, as has happened, for example, with other networks as 4G.

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[21] In reference to small towns or rural geographical areas from Spain where there has been a continuous process of emigration from their inhabitants to bigger urban territories.

I don't know what the solution is. It is true that the Spanish government has presented very well its State aid strategy regarding 5G roadmap in that component 15 of its Next Generation Plan[22]. For sure, it seems that it will not be easy to get this optimal equilibrium for all parties. And, for sure, this will delay the digital transformation that we are expecting with the Digital Compass. You will still have, perhaps, new rules, formulas or mechanisms that should be necessary to deploy 5G in rural areas and be considered, more sooner than later, in the Broadband State aid Guidelines. Otherwise, we could have a country full of towers but with no 5G services. So, I think that I'm not saying anything different from Alexandra and Krzysztof. I think that they are completely aware of the necessity of these new Broadband State Aid Guidelines, so go for it.

GARY HEALY
Director of Public Policy GSMA Europe at GSMA

By introduction I would like to talk about GSMA a little bit. We are a global organization, a trade association for about 750 operators in the mobile sector. I'm also working with the ecosystem around mobile, around handsets and other vendor equipment manufacturers. And, obviously, we have a huge interest in 5G and a huge interest in the development of 5G globally and also in Europe.

I wanted to focus on three challenges. Just going back to your original framing of this at the beginning of the panel around how we use policy instruments, what are the things we can do to accelerate the role of 5G in Europe? And I think there are two or three particular challenges.

The first is spectrum. Major spectrum is the lifeblood of 5G's life of the mobile industry and has been since the very beginning. And you're right in terms of saying there has been a lot of progress in 5G in Europe. We have about 38 countries globally who actually have got 5G services. We've got 50 operators in Europe who've launched 5G services – they're launching all of the time. So, as you mentioned, there are spectrum bands available to be an option at a national level. We expect around 20 new launches again in 2021. Our estimate is that by 2025, we would expect that one-third of Europe will have the ability to be connected to a 5G network. But we're still behind in terms of North America, China, the Asia region. We'd expect by 2025 over half of the connections in those regions to be class 5G. So from our perspective, the main challenge is making sure we have sufficient spectrum at the right bands, that it is at the right costs for operators, that there are good use cases and business cases behind how we're assigning spectrum. One of the studies we've recently done has shown that if we had between 1,000 and 2,000 Megahertz of additional spectrum in the mid-band range, we could develop more fiber-like speed services in rural areas. And looking at the estimates that the Commission have put together around what we need to do to deliver, the Digital Decades or targets, we believe that having more spectrum available in those regions could actually save up to €42 billion in developing fiber-like speeds in certain rural areas compared to developing fiber to the home type technologies.

The other point I'd like to make around spectrum assignments, which I think is important, is that the prices spectrum and the coverage obligations, and when regulators or governments assign the spectrum bands, do have an impact on overall coverage and coverage into rural areas. There's recent research that's been published on telecomms

policy showing that looking at 64 countries over the past 7-8 years, looking at the assignment practices of regulators and delays in assigning 4G spectrum, led to reductions in coverage. For example, if we look at it on average, a two-year delay in assigning spectrum can lead to 60% reduction in spectrum coverage in a particular Member State. And spectrum prices equally have, again, an impact. An increase in spectrum prices of 1% can lead to a 0.4-0.5% reduction in coverage. And I'm sorry to throw a lot of numbers and stats and things, but I think it's important to make that point around spectrum. If spectrum operators have more, they will use it. An operator does not reject having use of spectrum. And we have, when you look at 3G and 4G, always gone beyond the coverage targets in most Member States because of competition. So spectrum is a lifeblood. Spectrum: we need to have more of it. And I think we need to look at how we assign spectrum in terms of ensuring that the bands are available early and that there are sufficient bands, not just low band, but also mid-band. And then we also looked at price and I will come back to this at the end.

We also have looked at price in terms of what the operators can afford in their business cases. So, I would like to mention just two issues if I could. I was mentioning that we launched yesterday with ETNO, our partner Trade Association here in Brussels, one of our challenges around rolling out 5G in rural areas. Actually, 5G everywhere is about misinformation and people might not be aware that there were 322 arson attacks in the past couple of years, on mast sites, on new development, on exchanges, where people who were installing infrastructure were being attacked or being abused. This is across Europe, it's across the world, but it's predominantly in Europe. We produced a guide with ETNO to help local authorities and municipalities, to address this issue through science. There are no health concerns around 4G, we are doing the same spectrum bands that we were doing with 4G also in 5G. So we need to explain, not just the science and the health concerns, and it's not just us, but also stakeholders in rural communities need to do it as well, but also focus on the positive use cases of 5G. I don't think we do enough of that. I think we can see when we talk about 5G, that there are huge benefits in terms of employment, we anticipate about 2.4 million new jobs by 2025. This additional investment in any health, any education and other services that would use 5G and we would see 113 billion of investment which will increase the GDP of Europe up to 2025. So we can see that there is a benefit and we need to talk more about use cases, we need to talk more about the ability of not just local communicates but also, local businesses to benefit from the 5G infrastructure that will be built, particularly in rural areas, because what drives investment by operators is the take up of services. So as I mentioned before, sometimes there is market failure, sometimes in rural areas, there are challenges around the costs of rolling out networks because there isn't the right number of people. But if there are use cases, if people are deploying 5G in those rural areas, then operators will develop and invest.

The final point I'll just make, if you'll allow me, just in terms of policy instruments, is around the business case for 5G and it is a challenge for operators. There is in the market, at the moment, a huge challenge for mobile operators due to, in terms of competition, high data allowance and lower prices in the market. This is all good for the consumer. Operators don't have a problem with that, but it does create issues for them on a cyclical basis when it comes to things like 4G and 5G. And they need to make the business case to investors to try and spend money on licenses, but also spend money in terms of roll out. And our view of 5G is there's no premium here in terms of additional revenue. We want more use cases. We want to develop more services in the commercial space to encourage more revenue for 5G, which does help to make our business case. But there are things in terms of our costs. We mentioned already, there were increasing collaborations between operators around sharing sites and sharing masts. There are operators who are diversifying and taking away the actual tower infrastructure they've got to try and reduce

their cost base and try and leverage the assets they've got. But there are individual things around, for example, the Broadband Cost Reduction Directive, and we haven't mentioned that yet, where I think local authorities and municipalities and national governments can help to lower the cost of rolling out broadband networks. And I've seen this in Ireland a lot where, if you have a rural community, fiber is going to be an expensive solution for them to get the kind of speeds we're looking for in 2030. I think if local authorities can make available public lands, sites that are in good locations with a little bit of elevation, with some power; if the consent rules, and the bureaucracy that goes around consenting, are made more straightforward, I think that lowers the cost for roll out and particularly in rural areas. I think what we've probably seen as an industry that's worked very well in some countries has been the collaboration between operators with local authorities and with national government to try and look at the underlying cost of rolling out networks and address those underlying costs so that we can extend the reach of those networks into rural areas and make the case more effective for operators. We don't necessarily need to look at money subsidies in those cases. In those cases, then you're looking at really changing the incentives locally. We do face a lot of costs to actually have licenses locally for masts. There are normally ongoing maintenance charges and so on. So, in those situations, if we can use those charges, the need for subsidy is less.

Iñigo Herguera: Torsten, what do you believe about the policy instruments that exist in the European Union? Do you think, as a wholesale only operator with a big presence in Europe, that there is the need, in certain areas at least, for these Next Generation Funds or public support in some form?

TORSTEN KREITLOW
Head of Legal, American Tower - Germany

I would like to provide you a slightly different view on some of the issues from the perspective of a wholesale-only operator, which means American Tower is a wholesale provider of passive infrastructure only. This means we are essentially providing the towers, which my predecessors here also mentioned. And taking up what Gary just said, I think what is important to know about the tower industry is that we are providing some solutions for some of the challenges that we are facing when it comes to deploying 4G and 5G, particularly in rural areas. So essentially the wholesale only tower provider model is quite used all over the world. I think Europe is a little behind when it comes to realizing the benefits of that model. For example, looking at the US and Canada, about 70% of towers have been outsourced to independent tower operators there. In Europe, we're just over 20%. So there's a little bit to catch up. But what is TowerCo providing as a service? TowerCo is providing the service whereby we are trying to collocate as many operators on our towers as possible. That means instead of deploying three towers, we are deploying only one tower, which will be used by all the MNOs . This reduces not only the costs for the MNOs and the entire industry, but also the impact on the environment and the acceptance of the towers by the citizens because they see only one instead of three towers. So that is quite important.

And so, our industry has served well, I think, in supporting the deployment of 4G and 5G already. So even if we are only TowerCo, we are committed to growing connectivity globally. So we are fully aligned with the MNOs on this goal, and also with the European Commission and the Member States with regard to their gigabit society aim. What will be required to establish state of the art connectivity? It will be more towers, fast rollout and investment. What we are bringing to the table is, in particular, investment, which we are all talking about when it comes to coverage.

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[23] Mobile Network Operators

Our perspective regarding the tools that are provided by or used by the Europe Commission might be a little bit different. However, if we sum it up, it all comes down to establishing a regulatory framework and environment to foster investment and innovation. And I think, even if not everything is perfect, the EU Commission and also the Member States are on a quite good road here. As Gary mentioned, the provision of the frequency bands was late, but I think not too late. And we are seeing that in our portfolio already because the deployment or 5G is gaining some momentum. And what we hear in Germany in particular, and Gary might have a slightly different view of that, is that the flexibility that the Commission gave to the Member States when it comes to awarding the spectrum is quite helpful to foster innovation here. Because in Germany we have reserved 100 megahertz for the industry applications, to foster private networks used by industry conglomerates and smaller industry companies. This could really foster innovation because it's different from what has been done in the past. And we all need to see how that works out, but I think we have made a good start and that flexibility provides some opportunities to do a pilot here in Germany, which could be followed by other countries in Europe as well. I think that is quite good.

We have not progressed as far in Europe, as we have in the US, where we have awarded or have some license exempt spectrum in the 5G area, which is going to be used by CBRS application[24]s in the US. So basically, everybody can talk or Facebook could use those frequencies and provide services based on that 5G spectrum. And that could be a game-changer, as well. But we need to see how that works out, in particular. What is most important when it comes to the toolbox is license obligation. I think we are seeing that here in Germany, and I think that it's true for many other countries as well, that license coverage obligations are really driving the deployment and the roll out. I think that is key. And I'm not singing the song of the MNOs here. But those extensive coverage obligations should be aligned and balanced with a very clever auction mechanism or other mechanism for spectrum, which is not only true for 5G, but will be very true for the upcoming low-band spectrum awards as well.

One area where we are, in Europe and in particularly Germany, falling short and which really impacts the 5G deployment, is the permitting situation. We see that permitting procedures in Europe and particularly in Germany are taking too long. And that it's impacting deployment. In the toolbox of the European Commission, there is admittedly only a limited area of tools to change that permitting area because that is particularly something that is done by the Member States. And we are seeing some initiatives here in Germany and possibly in other countries, as well. However, we are by far too slow in implementing those changes to the permitting regime and that is really delaying the deployment. Also to be mentioned here is that the Member States and the communities could support the deployment by providing not only positive environment for investments, but also by providing reasonably priced land for the deployment of infrastructure, like Gary mentioned. That is something that we see here in Germany and sometimes we are very successful, and some are really supporting that approach. Some others are not. That is something we need to work on.

Coming back to your initial question about public funding: hopefully, my description of the model of the TowerCo indicated already that we think that the deployment of infrastructure should be primarily driven by private investments, by the industry. However, we are willing to invest in infrastructure and support the deployment. What is going to be

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[24] Specific to the United States, Citizen's Broadband Radio Service (CBRS) is a piece of the radio spectrum between 3550 – 3700 MHz. This is a valuable area of the spectrum because it allows good propagation (ability to penetrate walls and go medium distances) with the benefits of higher bandwidth services, such as LTE and 5G. CBRS spectrum can be used to deploy a stand-alone, private LTE or 5G network inside a building. Ray, Bryan (2020). "What Is CBRS and How Does It Help IoT", retrieved from: https://www.iotforall.com/what-is-cbrs

addressed by some subsidies are the gaps that will remain because there are some rural areas where there is absolutely no business case for anybody to deploy infrastructure and there is a reasonable request from all the inhabitants there to be provided with good connectivity. I think that is where the State could jump in and provide support. In addition, and I think that is something that we have not yet touched upon here, is that there will be some cases where local, national, and CEF funding[25] could help, that is, trials for innovation. We see that in Germany, the government has set up 5G trials where an industry and communities will get some subsidies for innovative trials for applications of 5G. And I think, as we all see, that there is not yet the "killer" application for 5G that could be very helpful, because that broadens innovation and initiatives and engages all the communities, because they feel that they are taken care of and that they can take care of their needs themselves. I think that is something very important. And when talking about CEF funding, I think there will be some business cases like autonomous driving and where it will be a very digital business just for the industry to cover all railroads and all roads by infrastructure. And I think here, subsidies come into play as well.

IÑIGO HERGUERA
Moderator

I will ask a combined question related to tower company's network sharing agreements. We're seeing a lot of collaborative agreements among operators, of many kinds, in fixed networks and mobile networks. Many types of contracts, many kinds of joint deployment, joint usage, passive, active, "mix and mix." And the European Code, the regulation itself in Europe, provides quite a lot of flexibility to really share anything. And this, together with these only wholesale models like American Tower, like Cellnex, they are reducing their costs. These are measures, contracts, to reduce the fixed cost of deploying. Hence, this is good news and operators are using it. And this is a bit in contrary to this public support, which probably is needed. But **how well do you think this kind of network sharing, this kind of only wholesale, as Torsten was explaining, can work so that maybe you can reach everyone?** And with this network sharing and also even the neutral operators, there's quite a lot of concentration and this might have an impact on competition itself. **Do you foresee any kind of problems?**

ANNA MERINO-CASTELLÓ
Director Strategy & Economics at PwC Spain

I think that this type of cooperation, these network sharing agreements, can be an efficient mechanism to foster the deployment of 5G in rural and urban areas, whether or not there are public funds available. Why? Because of the significant costs. We are talking about the high cost of widespread of 5G network deployment and in many cases, industry collaboration may be necessary to help speed up all the network deployment. Moreover, in a situation of lower profitability for the operators and in most of the European countries, this kind of trade-off with cooperation appears. And let's talk about efficiency, the profit from efficiency in the market and social interest. We have to ensure effective and sustainable competition between service providers. I think spectrum agreements are not new in the sector. In fact, they had been used to support the rollout of the previous generation of mobile networks like 3G and 4G in rural areas. And of course, I think this could be extended to the case for 5G in rural areas and also in urban areas. However, since these kinds of network sharing agreements fall in the category of horizontal agreements, the DG COMP has many things to say here. In fact, we are aware of several cases in

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[25] Connecting Europe Facility

the past when DG COMP acted ex-post by denying the agreement because of negative effects, and then of course, leaving the party in a position with less incentive to invest and affecting consumers, the deployment of these kinds of networks,the social interest, the competitiveness of the industry, etc. Given this, what will happen now with the rollout of 5G? Is there any stance in prohibiting or denying of these agreements ex-post? Shouldn't it be more interesting to allow or at least write in the guidelines, trying to determine in which circumstances efficiency in the market and the welfare of consumers are greater than the potential negative effects on competition? In fact, in the European regulations we have nowadays, there are interesting instruments and ways available for solving these problems and being more efficient for everyone, and also getting the public interest objective of 100% coverage and increased competitiveness in European countries. In this sense, I think the European Commission should be able to elaborate a kind of protocol or guidelines in order to determine ex-ante what kind of public finance and cooperation are allowed under certain circumstances, for example, the number of inhabitants, the existence of previous networks, etc.

I'm aware that there are several institutions that have categorized the areas where network sharing would imply fewer objections. For example, based on population density, this could be a first option, of course, that can be approved in the Broadband State aid Guidelines. It is true that in denser areas, in urban areas, we have to promote private funding and companies can compete, and competition is preferred. What will happen in less populated areas? In this case, perhaps we would like to have these kinds of agreements in order to get that objective of deployment of 5G networks. Another option I think is to enlarge the conditions for Article 101.3 of the European Treaty to be applied. What does that mean? That it enlarges efficiency in horizontal agreements and more competitors. We know several cases in the past regarding this kind of network agreement that perhaps if the efficiency were analyzed in a more flexible way, it would have been allowed. Moreover, I think another option is the Article 107.3 of the European Treaty, regarding efficiency around public funds. These of course, can be done through these new Broadband State Aid Guidelines. Why? Because when we judge the efficiency of having these types of agreements, we have to show the big benefits, that you're increasing consumers choice, increasing the number of providers that can operate in certain areas or by getting an alignment of incentives between the operators to achieve coverage in a faster way. In all these cases, I think that the policy needs to be based on the evidence, in this case the efficiency evidence, and take actions to encourage certain business models in order to address potential agents such as market failure or lack of competition, to foster that quick roll out of networks, to get these kind of positive externalities they're supposed to bring to society and the industry.

TORSTEN KREITLOW
Head of Legal, American Tower - Germany

I very much favor passive sharing. Sharing is our DNA. So, if not only us, TowerCo, but others are still sharing passive infrastructure, I think that is something that is following our model, and how could I argue against that? And I think it's established that that is competitive-neutral. And with regard to active sharing, the picture is a little bit different. I think having been in the industry for 20 years now and doing lots of antitrust work, I fully rely on the antitrust authorities to find the right balance between market failure and the protection of competition. I think to summarize it, the pro-competitive solution is the neutral host here. That is for passive infrastructure. And not quite sure whether we see that somewhere in Europe or in the world, but possibly neutral operators might do some active network operation in rural white spot areas and in future as well. I wouldn't exclude it.

When it comes to the question of subsidies, I think what we all know is that there needs to be a market failure and we need to balance the market failure or we need to make sure that subsidies are not frustrating or impacting the private investments by MNOs and by TowerCos. I think there is common ground, definitely. And also we all know based on the fixed network of subsidies, that possibly the government, the state, is not the most efficient actor in a market environment and that needs to be taken into account as well. We need to take into account as well that subsidies programs are difficult to establish and difficult to administer. Both require big efforts that sometimes or most often really impact the deployment of infrastructure and the investment of money.

IÑIGO HERGUERA
Moderator

From the position that you have, you are seeing all over the world, all over Europe, how network operators operate and what their problems are. **Do you think they are vertically de-integrating the operators?** There is a lot of network sharing, with some operators selling their towers to others, some operators creating joint ventures with others. So the landscape is changing quite rapidly here. The second question that I have regards complementariness between demand and supply. You call it business cases, right? **With 5G, how is demand behaving?** Because it seems like the migration towards 3G to 4G was kind of easy at the residential level. You just migrate the people. But with 5G, it is different because 5G seems like new, really new business, with new applications and new services. How is this behaving? **How is demand on the business side?**

GARY HEALY
Director of Public Policy GSMA Europe at GSMA

In terms of the disintegration, the vertically integrated operator breaking up the old traditional MNO model, I think that is happening. It's happening out of necessity, I think. That's important to state, that we did develop in most Member States, four, maybe five networks and each network operator had to build their own network, their own infrastructure. And I think we've seen for quite a long time, as Anna said, that operators have collaborated and worked together and tried to share networks because it's a network cost issue. And I think increasingly operators are seeing that the network elements, the kind of maintenance and network is a different type of skill set to the retail side of the business and to the network intelligence side of the business. So it's kind of a natural separation. I think one of the challenges we're going to have is that in the 5G world, we need more sites, we need more locations, more masts. So we need to have more sharing. And I think we need to do that in a smarter way, across fewer networks and fewer kinds of mast infrastructure operators, you know, to make that cost-effective. Otherwise, we're not going to get the level of coverage at the right price for the operator, if that makes sense.

In terms of your second question around supply, I think it's too early to say about 5G. I think a real concern for operators is that we don't know those use case models that we're looking at. We do make assumptions when we're going into auctions to try and buy spectrum, that what we see in the past, is what we'll see in the future. So we see increasing demands on data and over the top players, who are going to be putting more applications on to users with limited data demands. So we don't see a great world of 4G and we don't see it translating into a greater world of 5G unless there are opportunities. At the moment, we don't see where those opportunities are. We'd like to think there

are lots of opportunities, given the capability of 5G and opportunities that are there for things like health and for automated transport and so on. But we don't yet know how those business models will evolve. And MNO don't know to what extent they will be able to actually monetize that in terms of additional traffic. At the moment, it really is a very scary world they were looking into from a mobile operator perspective. We need to buy licenses. We need to be in the 5G space. But we're looking at traditional ways of actually monetizing that investment. And, and we are hopeful that over the next couple of years, as networks roll out, we will start to see those business use models emerge. And we´ll see if there are any other opportunities.

IÑIGO HERGUERA
Moderator

At the wholesale level, high concentration seems to be occurring as well. But this is only at the wholesale level models because you have only mobile network operators, with all the new tower companies offering this new access now. With this high concentration, we're worried about the wholesale level access in order to promote, to guarantee competition there. **What do you think about the possibility of launching a publicly funded tower company in any country in Europe?**

TORSTEN KREITLOW
Head of Legal, American Tower - Germany

I think the question about concentration has been answered by competition authorities and the most recent merger control modification cases and found not to be an issue at all. And I don't think that it's going to develop in that direction. One thing that needs to be taken into account as well, and that is something which Iñigo just mentioned, is that there's not only TowerCos and MNOs offering access to third parties and to users. But those are really open to providing access to anybody. So there is no market for closure at all because sharing is part of our DNA again. The market is balancing the prices and that has been the case globally even with market concentrations, like in the US, where I mentioned, at least there are 76 or 70% of the towers outsourced. But also the deployment of 5G and 4G has brought additional players to the market. And the market is much bigger than the one mentioned by Iñigo and as one might think. And we are seeing utilities which have control for the first time across the tower model based on the price reduction directive. And particularly they are trying to become TowerCos as well. And we all know how many electricity towers are in the market and can be made fit for purpose. So I don't think that there is and should be any concern about market concentration.

Second question: yes, we will see whether that is a good model. Where market failure comes into play, there is a case for subsidies and how they would organize the subsidies is the second question. And basically, they could try to do it via a TowerCo. There are different models, as I see it, which are applied here. Some really have TowerCo, which bills and owns towers. I'm not quite sure whether the state is the best and most efficient market player as I mentioned. And then there are TowerCos that are not really TowerCo, but support the deployment of towers in rural areas. So they are having the negotiations with landlords, with municipalities and so on and so forth. They are more or less a service company. And they could be very helpful because the state becomes involved and again, creates a positive atmosphere in the rural areas. That could be a game changer possibly, but we need to see whether that works out in practice.

3. EU Digital Challenge: Digital Compass

KAMILA KLOC[26]
Head of Unit B3 Markets in Directorate B Connectivity
DG CONNECT

First of all, last week we adopted a Policy Programme of the Digital Decade, which we will now start negotiating with the Council in the Parliament. The Digital Decade Policy Programme has been coming since one year ago, when President von der Leyen mentioned it in the State of the Union. There are two ideas: one, regarding the targets for the recovery funds of 20% going digital and second, that there is a need for new governance, a new ambition in terms of digital policies in general. She also mentioned in her speech connectivity for everyone. That was a bit of a triggering event for us to start preparing the Digital Decade Communication, which was adopted in March last year.

The Digital Decade Communication has a setup vision, targets and approach for the setup of the governance framework and digital principles for the 2030 Digital Decade. After that, we launched consultations with the Member States, with stakeholders, on the Digital Principles Declaration. These consultations were done over three months, reaching out to citizens very broadly across the EU. The Declaration of Digital Principles will come quite a bit later and we're planning to have it ready by the end of this year. This would be a joint declaration together with the Parliament and the Council.

On the Policy Programme side, we had been consulting extensively with stakeholders to see how the concepts that we put in Digital Decade Communication can be transposed into the legal instrument. We had several consultations including digital assembly targeted consultation, and many meetings and discussions already with Member States and with the Parliament. Out of it, we proposed in a State of the Union speech, so basically, last week after Digital Decade Policy Programme, a legal instrument that will be now discussed with the Council and Parliament.

The Digital Policy Programme and the consultations that we have done basically confirmed the main targets that we proposed in the Digital Decade Communication. As you see, we have several targets that we would like to achieve until 2030. These targets are at the EU level, but the Digital Policy Programme will transpose them onto the national level as well.

One very important target, and I will of course focus mostly on the connectivity targets, but I just wanted to mention one which is very important, and which was mentioned by President von der Leyen in her speech, related to basic digital skills. We would like to achieve the target of 80% of the adult population having basic digital skills in line with the European pillar of social rights. But also we want to ensure that Europe has 20 million employed ICT specialists with competence, women and men, also by 2030. So that was one thing that President von der Leyen underlined specifically in her speech last week.

The second very important target, which is also related to her announcements is related with the production of semiconductors. Basically, on the connectivity target, I think it's very important to mention this one also in the context of this meeting. The target is that by 2030, all EU households will be covered by a gigabit network with all populated areas covered by 5G. So this is the target that we want to achieve, as you see from the slides, the baseline that we're talking about right now is 59% of the coverage network.

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[26] Ms. Kloc spoke in the capacity of the Deputy Director of the Connectivity Department.

The Digital Decade targets include a connectivity target, that is now also clearly mentioned in the decision in the path to the Digital Decade: by 2030, all new households will be covered by a gigabit network with all populated areas covered by 5G. And that for download and upload, this would require by 2030 a network with gigabit speeds that should be available and accessible for all thos e who will need or wish such capacity. And as I mentioned, the type that includes all populated areas covered by 5G. So this is the target.

First of all, a big novelty of the Policy Programme is that we are introducing, proposing, to the Council and the Parliament, cooperation mechanisms. These are similar to the Energy Union mechanisms with many changes and adjustments, I would say. I know the Energy Union has a bit of a different setup. It's based on binding targets, which are translated nationally. Here we are talking about the European targets, policies and how to achieve the vision, the targets, the objectives of the program. This Policy Programme is subject to the negotiations that will start now with the Council and the Parliament. And the final program would be decided in the trilogues. But the first step after the adoption of the program would be that the Commission will develop European-level trajectories and explain the methodology and how the national trajectory should be established. As we have seen, different targets can be translated. Some of them can be translated at the national level, some of them are the European targets. And they know that to have this common pooling of resources, abilities and collaboration, we need to make sure that each Member State will look into the targets and objectives and will tell us how they plan to achieve them and what are the national trajectories towards these targets. That's when such national trajectories can exist. So what would be the next step after the guidelines issued by the Commission? National EU trajectories would be the response from the Member States, with national roadmaps with national trajectories, national policies, national actions, with the projects that they plan to develop with, of course, the business side, in terms of achieving these targets.

After that annual cycle, the Digital Economy and Society Index will remain one of our main monitoring devices. This is now becoming part of the legal framework. I heard colleagues asking when this year it will be published — very soon. I just wanted to tell my colleagues, it was a bit delayed also because of the link with the RRF discussions. So that's why there is a bit of a different date for releasing all the indicators. But I think the majority of the information that is in the staff working document, accompanying the Digital Decade Policy Programme is already updated, and the new DESI[27] will be released very soon. But DESI will stay as a monitoring device. And DESI reports will be part of the annual report that the Commission will be issuing on the state of the Digital Decade. The Digital Decade report will also, the novelty will be that it will evaluate and provide recommended actions to Member States. So, it will evaluate the situation and the progress towards the targets based on DESI, based on the broader picture, because we look very broadly on all relevant aspects in this report. And it might already contain recommended actions for the Member States, such as what needs to be sped up or what kind of multi-country contracts we see. So there might be a lot of elements that we would like to provide for the consideration of the European Parliament, the Council and the Member States.

After the report is issued, then this would be the normal annual cooperation cycle that will start our discussions with the Member States. And these discussions will focus on how to remedy potential problems identified both at the national level but also at the EU level. For example, what kind of multi-country projects can be proposed? What kind of policies can be proposed, both on the national side and the European side? Which implementation, which measures should be split-up like, for example, legislation that is not transposed? So, a lot of elements would be discussed between the Commission and the Member States, in particular in this cooperation cycle, but also with the European Parliament and the Council, which will continue close cooperation with the two institutions.

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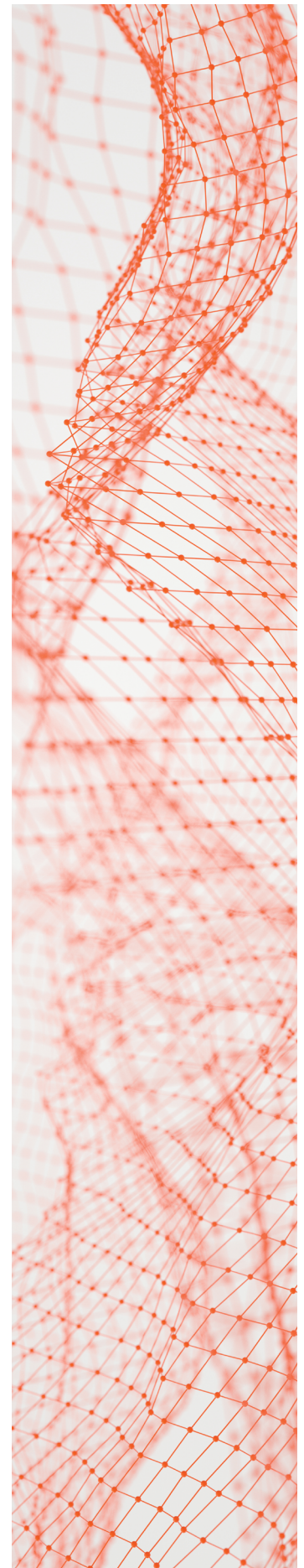
[27] The Digital Economy and Society Index (DESI) that can be consulted at: https://digital-strategy.ec.europa.eu/en/policies/desi

We also envisage stakeholder involvement. So there would also be a Stakeholder Forum established, which will be supporting us with the preparation of the report and this collaborative, cooperative dialogue with the Member States. As a result of this annual cycle, we would see, for example, adjustments, international developments by the Member States when we see that some of the elements have not been achieved or under these recommended actions. As a last resort, if we don't manage to achieve the necessary adjustments, the Commission might issue recommendations to Member States. That would be as a follow-up to all this collaboration process.

Then on the next slide, you have multi-country projects. This is because the program includes also a novelty, which is how to achieve the targets and the Digital Policy Programme together by pooling EU, national and private resources. We are already envisaging several areas where the Multi-Country Projects could occur and in fact are already occurring to some extent, including as a European deployment of 5G corridors. This is the indicative initial list that we already proposed in the communication and which is also included now in the decision. The Multi-Country Projects will be decided on objective criteria that we propose in the decision. This will be done mostly by checking if indeed they help with achievement of the digital transformation type and how they can also help with industrial recovery that we all face now. One of the novelties is that the Commission will take a more active role. We are planning to advise Member States when these Member States are, for example, interested in establishing Multi-Country Projects on block chain. What are the best instruments, existing instruments in the first place, to implement it? It might be a joint undertaking, through agencies or other existing mechanisms that the Commission already has at its disposal. If we cannot find a solution under existing instruments, we plan to establish a novel element European digital infrastructure consortium, in order to implement concrete multicultural projects. But first, we will always check if the current mechanisms are sufficient. And I think the most important thing is indeed that these mechanisms will allow us to pool European, national and even private resources. And that's why we also think it could be a game changer as well.

The Declaration of Digital Principles, which is also a very important element, will be adopted also by the end of this year. We will also monitor digital principles under the Digital Decade report. In terms of the Digital Decade Policy Programme, I mentioned the projected project targets that we will advise the Member States. We'll also propose European ones. I mentioned the Member States Strategic National roadmaps and the annual cycle. By 2026, the Commission may review the digital targets, which is also connected with the RRF review process, so we think it's good timing.

And finally, and focusing on the State of the Union delivered by President von der Leyen and what she said about connectivity, the financing and regulatory side: to repeat the words of President von der Leyen one week ago, she would like to achieve in an unprecedented manner investment in 5G and fiber. And I think it was very **powerful and important message to take with us**. On many levels, in the Commission but also **on the regulatory policy side, we are already trying to ensure the investments in 5G and fiber and a good regulatory climate for these investments**. One of the elements, of course, that we are doing is on the financing side. You know, that **CEF has envisaged €2 billion for deployment of 5G corridors along the major EU transport roads**. We are working on elements which are extremely important in terms of 5G deployment in local communities, so there are a lot of actions already envisaged. As you know, the Recovery funding is also related to 5G and competing networks under the currently adopted recovery plans, national plans. It is already estimated around €13 billion that would be committed for this specific target.

What we see in addition, in relation also to the Digital Decade monitoring reporting and collaboration, is how to look into different current monitoring mechanisms. You know that the Member States and the connectivity toolbox are presenting to us national roadmaps. This might be one of the elements that we might streamline under the Digital Decade reporting. There would be, of course, follow-up to reforms from the Recovery and Resilience Facility Plans. We're also discussing how to ensure this and as you know well, monitoring and implementation of National Broadband Plans that can be also streamlined under this overall Digital Decade monitoring. This will also streamline all other monitoring and cooperation that we are doing in the field.

Regarding regulatory implementation policymaking: for us, it's extremely important to make sure that the code is properly implemented everywhere in all Member States. The framework already has a lot of elements that could be very usefully used to accelerate investment and accelerate connectivity, including, for example, the co-investment of wholesale only provisions. For us, it is absolutely essential that the transposition now speeds up. We are very closely monitoring the Member States and you might hear tomorrow our next announcements concerning the issue of the transposition of the code. Unfortunately, we still see that some Member States are lagging behind.

On the regulatory side, we're also doing a review of access recommendations. As you know, in line with the code we reviewed, we issued new recommendations in the relevant markets, which is streamlining regulation, focusing it on only the market failure that persists at the EU level. This next state is to look into how damages are imposed by the regulators. And that's why we are looking into all the 2010 and 2013 recommendations that we issued in this context next-generation access and non-discrimination costing recommendations; at how to adjust these recommendations to the objectives of the code, including incentivizing deployment of high-capacity networks. We're also looking at the general framework of the code to see the impact of co-investment or the model of cooperative agreements and other elements. We're looking at how regulators should continue regulating the market or where they should focus and what would be the best set of remedies in this context, in terms of access.

Last but not least, we are also reviewing the Broadband Cost Reduction Directive, also mentioned before. This is a little bit beyond the issue of the regulatory per-se environment, but it is very much focused on removing the obstacles that currently impede the deployment of new networks. Overall, we are also very closely monitoring the situation with access to ducts, which is also related to the view of the Broadband Cost Reduction Directives, because we also see this as also already underlined in the code. This should be one of the main remedies under the regulatory approach in terms of ensuring proper access for competitors, but also making sure that ducts are used to the extent it is possible, that new ducts are built if it's necessary. This is also very much the focus of our regulatory intervention. We plan to do it through the framework, as I said, but we're also planning to do it through our regulatory practice. We have our own instruments, which is the monitoring of the decisions by regulatory authorities in terms of access to the networks, in terms of market reviews. And we are very closely following them and issuing our decisions, including sometimes better decisions when we think that the continuation of regulation in the form that is proposed by regulatory authorities is not necessary, because of market development and allowing for development of the competition as well.
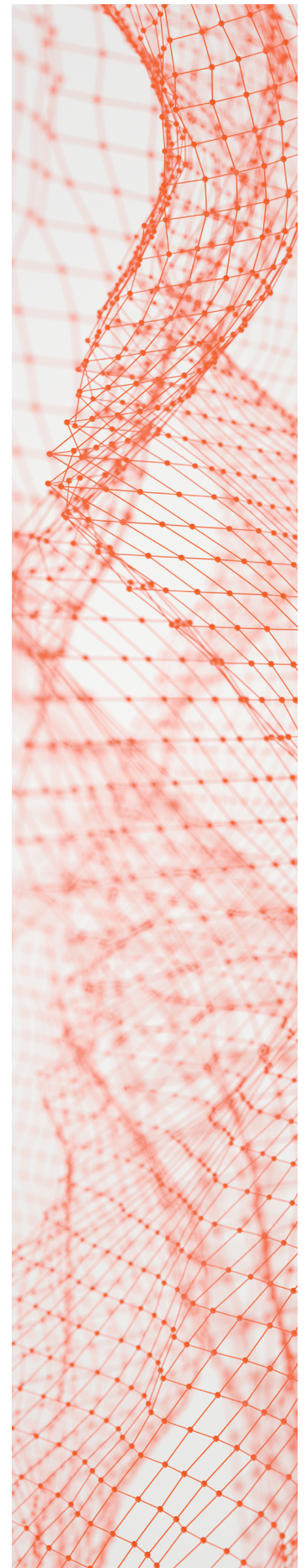
4. Roundtable: EU Digital Future: Digital Compass

Moderator:

JORDI SALVADOR
PPSRC Manager

This roundtable will focus on the challenges of the EU's digital future. We will discuss how both the operators and the prospective providers can contribute to achieving this digital challenge defined by the EU, and more specifically the targets of the digital compass in terms of: first, digital skills and second, the digital transformation of business, where the EU is lagging behind compared to other regions in areas such as IT, industrial application, IoT and Cloud and artificial intelligence; on the third level, securing sustainable digital infrastructure and finally, digitalization of public services. The pandemic has forced firms and people in the EU to accelerate the path on which they transition to a digital economy, especially considering the competition from other regions in the world.

This is what the European Commission presented last week: that the path to the Digital Decade is a concrete plan to achieve the digital transformation of our society and economy by 2030. According to the international digital economy and society index, Europe on average is doing well. However, there is heterogeneity in the level of achievement among different countries. The leading countries, like Finland, are doing relatively well compared to the US or China. However, there are other countries that are lagging behind. In order to have a European Union approach, or a broad approach, we are going to discuss all these issues with the three speakers that are here today. First, Jean-Pierre Faisan is the Chair of Communications working group at the EWIA, the European Wireless Infrastructure Association. Maarit Palovirta is the Director of Regulatory Affairs at ETNO, the European Telecommunications Network Operations Association and Jaume Pujol is Head of Regulation at Cellnex. Regarding the organization of this session, we are going to follow the first roundtable so I'm going to place a broad question where each of the speakers will have around five minutes and later I'm going to have like one specific question to each of our panelists. Just recall that you can place your questions through the chat, and we will transfer at the end of the session to the panelists.

So it seems like the targets and the objectives of the European Commission to be achieved by 2030 are quite challenging. We've seen in the first panel how difficult it is to provide all this infrastructure, to invest in these infrastructures needed to develop these services. So I would like to know how each of the speakers, hopefully being like this, plan to achieve this digital transformation by 2030. Considering where we are, which are the main challenges to achieve them at both European and national level; and if they consider that the targets are maybe too ambitious, considering where we're currently at. I would like to know maybe starting with Jean-Pierre Faisan. **How do you see it, these targets placed by the European Commission?**

## JEAN-PIERRE FAISAN
Chair of Communications working group at the EWIA, the European Wireless Infrastructure Association

I'd like to start with one question. What's the best way to get out of a crisis like the one we've all encountered and that has shaken the world with the pandemic? In our view, it's to share forces to reach an ambitious goal. And this is why we welcome the vision set by

the Commission that Kamila Kloc has presented on the digital compass. This is especially since infrastructures are recognized as one of the four cardinal points of the compass and to a very large extent. But it includes an objective which is major, which is connectivity and especially 5G everywhere. I represent EWIA, the European Wireless Infrastructure Association. And we are 10 TowerCo members present in 14 European countries. And our members operate globally over €1 billion worth of assets. Our specificity is that we are independent players. That is, we are not owned by MNOs or joint ventures of MNOs, and we specialize in providing wireless infrastructure to wireless service operators. Our members in one word, invest in long-term, high-quality shared telecom infrastructure. I think Torsten in the previous session, which is also a member of EWIA, has presented basically what our companies can bring. I will just recall it very briefly. We bring our existing wireless infrastructure, circa 100 thousand sites and constantly expanding, quick and open access under the neutral host model. And we bring long-term investment with industrial commitment.

Now, to answer your question, Jordi, I'd like to highlight two things. First, the challenges to reach that vision of 5G everywhere. And second, how to make it happen? We see three challenges to reach that vision of 5G everywhere for Europe: technical, timing and financial. Technical is very simple. In our view, Europe needs more towers where there are none and we know there is a huge objective of improving the coverage. But also where there are towers, these need to be reinforced because they need to shelter stronger antennas for 5G. And of course, we also need to deploy small cells to get ubiquitous coverage. The second point is timing. Europe needs a fast rollout. Because as emphasized by the Commission, the digital compass is not only about creating the infrastructure. We could have all the time in the world to do that or at least 10 years. Actually, there are many other objectives, three other directions and they are supported by an underlying infrastructure. So we need to get that infrastructure created and active as quickly as possible. The third point is Europe needs capital to go through all those objectives. And especially for instance, for wireless connectivity and 5G, we think the minimum required is about €56 billion and if you extend to everything that is included in a 5G ecosystem and critic services, IT associated and all that, it can reach €160 billion. So it's a huge, massive investment. The question now is how to make it happen.

Earlier this year, we participated in the task force led by a European think-tank, CPS, on a new industrial strategy. And among the various subjects considered, there was the acceleration in 5G. And this taskforce emphasized new business models for infrastructure-sharing among their recommendation. As EWIA, we see the digital compass as an opportunity to catch up with other regions. In reaping the benefits of what we see as the optimal wireless infrastructure sharing model, which is associated to more outsourcing of the wireless infrastructure to independent players. In many regions of the world, and this has been already said, the level of outsourcing is quite high, 40 to 50 percent in most regions of the world. And it reaches 80 to 90 percent in the Americas. In Europe, it's 20 percent. Now, this is market-led transformations, so there's no point in setting an objective and what should be the exact target. But we think it is a very realistic and ambitious vision to target something which is in some areas, other regions in the world, maybe not up to what is happening in the Americas. This is because there are other models which exist in Europe and it's important that there remains coexistence with other models. But we think reaching something in the range of 40% to 50% is both ambitious and realistic. This would facilitate raising the necessary upfront financing to set up the 5G infrastructure. And this would also bring significant economic benefits to Europe during the rollout of the 5G for a very simple reason, due to increased sharing. And, of course, it will bring additional benefits for the coverage of under-served areas, fostering innovation not just well-suited existing actors but also new innovators in the wireless services. And also maybe the verticals which will play a role in a cost efficient and in a greener, more sustainable way.
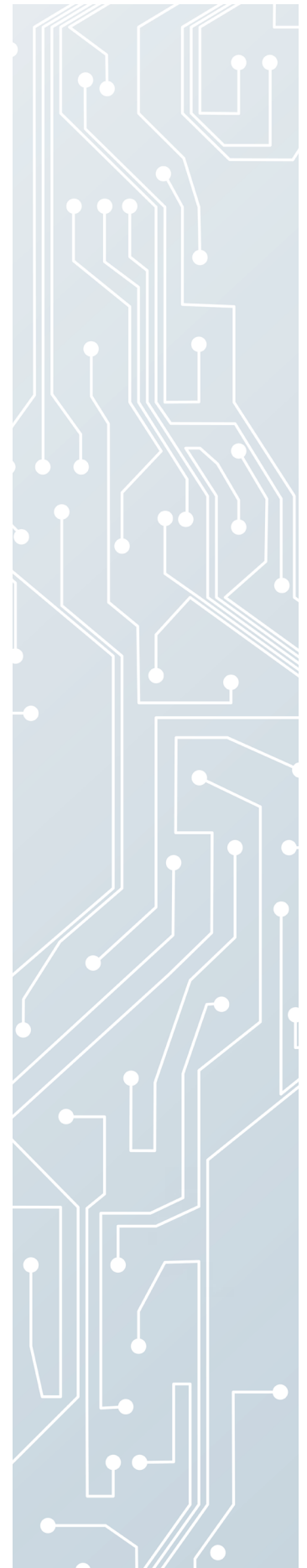
In conclusion, it's necessary, in our view, to share forces to reach the ambition in the digital compass. Regarding 5G everywhere, a new business model is emerging in Europe. It's proven in other parts of the world that it's possible. We're very optimistic because at EWIA, serving is our business.

MAARIT PALOVIRTA
Director of Regulatory Affairs at ETNO, the European Telecommunications Network Operations association

Before starting, I'd like to say a few words about ETNO. So ETNO indeed, as already mentioned, represents the largest or the leading telecom operators in Europe. And for the moment we have about 33 members if I'm not mistaken. And in terms of investment, we represent about 70% of the fixed mobile network investment footprint in Europe. So I would like to maybe start by saying a few words about the new Policy Programme in general. And I do agree with you that it is very ambitious. And it is ambitious when we look at the targets specifically for connectivity, which is the area where operators, of course, are most impacted directly. But I think it's also equally ambitious actually across the other areas. Whether it's public services or digitizing industry and skills, it is also very ambitious. And what we are very happy about is that there seems to be a balance actually across the different metrics. So instead of just looking at connectivity, we're looking at the full ecosystem. And I think that's very important if we want to make and reach these targets by the end of 2030. Now Kamila was just showing some interesting numbers. So if we look at connectivity in general, there's currently 59% coverage of gigabit connectivity on 5G. I think she quoted 14%. We know from a recent study we have a number of about 25 percent on 5G. But nevertheless, it is clear that the gap is still quite sizable. And so the key thing is then actually, how can this program, but also other policy measures contribute to reaching these targets?

And just on a general level, we would like to congratulate the Commission that they have actually managed to introduce some innovative approaches in the Policy Programme. And I think the first one indeed was the fact that now we're looking at the ecosystem as a whole. So not only talking about supply, but also about demand-side policies. And as we all know, when we start talking about a business case, there's a strong interdependency between supply and demand. This is an excellent thing from our point of view. Secondly, also, the program foresees different types of processes in terms of coordination and accountability to help to harmonize the national plans and approaches. And I think this is again very important. So when we're setting these rather political targets, it's also very important to think how can we then measure ourselves in a way that it's transparent but also harmonized across the European Union countries? We're also very specifically pleased that it seems that spectrum was included in this framework. And I think that this has been an area, of course, where we as the telecommunication industry have had some concerns. So it is also good if we could add spectrum immediately for 5G, but also in the longer term for 6G into this Policy Programme framework.

And finally, what is also very encouraging is that the program, it seems to be highlighting further collaboration between industrial players. And there was a special mention about a European Digital Infrastructure Consortium[28]. Again, I think it's very important. And Jordi, you mentioned that Europe seems to be lagging behind. So I think if we are indeed trying to aim for European companies and European tech industry to become a global digital leader, it is very important that we pool together our resources and try and work together

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[27] A European Digital Infrastructure Consortium is a new instrument proposed by the European Commission to help speed up and simplify the setup and implementation of multi-country projects, where other existing legal frameworks may not be appropriate, more at: https://ec.europa.eu/commission/presscorner/detail/en/QANDA_21_4631

on innovating, but also in investing in the networks. So again, we see a lot of potential in this respect. Now then the big question is, and as the previous speaker said, so how do we get there? I'd like initially to raise a couple of points. Policy framework, of course, plays a key role. So in the previous session, we had a very good discussion on the role of public funds. And I think Krzysztof mentioned that public funds make up about 20% of all investment. Now if we look at the investment gap, at the moment, we had a recent study from the Boston Consulting Group, which estimated that the gap is about €300 billion for both fixed and mobile. And so if you think about approximately 200%, or rather, less than half coming from public funds, there's still a huge gap for investment from the private sector. And if we keep the current policy framework as it is, and the level of investment as it is, private sector funding or investment would cover about one-third of that. So again, there seems to be a gap in terms of the private investment and the only way really to substantially influence that, or to try and bridge that gap is by looking at our policy framework and our regulatory framework. And I think that in Europe we have a variety of tools in which we can look at this branching from various policy initiatives and perhaps we can touch on those later. But this can be anything from pricing regulation to prop and cost reduction directive, network sharing and other good things. So it is very important that we match the regulatory ambition with the political ambition of these targets.

The second thing that we would like to also see, as I already mentioned, is that the KPIs that are being used in this program are harmonized and clear. So we, as many other stakeholders, are very much following the DESI index that the Commission publishes every year and it's a very useful tool. But there had been some issues in the past regarding the way that the KPIs are being formed or indeed the metrics that the members they are using to report on the different numbers. So we'd like to also highlight that it's important to make sure that we have harmonized metrics across the union. And finally then, as there is already this ambition to try and work together and put industries together, together maybe with governments as well, to work together on critical and strategic initiatives in the digital area. It is also then important that in the policy area, we need ambitious support for collaboration also from the policy framework. So again, network sharing here plays a key role. And this is really crucial to increase the scale for digital solutions, as we still tend to be nationalized in the EU to a large extent, even in the digital markets. It is important that we find ways to increase the scale for European companies to then be also able to compete globally. So maybe I'll stop with my initial comments there and let the other speakers chip in.

Jordi Salvador: Jaume, how do you see it from Cellnex these "ambitious" plans set by the European Commission.

JAUME PUJOL
Head of Regulation
Cellnex

First of all, Jordi, let me thank you and all your colleagues for inviting us and for organizing this really interesting conference and with such a high level of panelists.

From the Cellnex point of view, I think that having a compass, a digital compass in this case, will always help to drive ourselves in the long run. And this is always a good idea. At the end of the day, it's a good strategy to decide where to go, and in this case where to be in 2030. This would probably be the time to define the tactics so we know where to go. Now, let's decide how to go there.
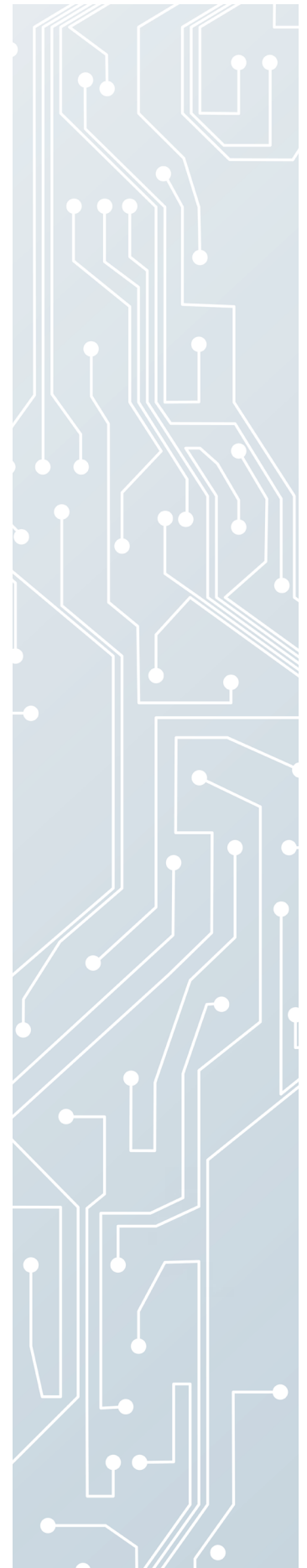
The Digital Decade, as I said, is an ambitious plan that would require the cooperation of all the European telecom ecosystem, including both industry, regulators and other key stakeholders. But let me zoom out just for a second and having a wider view, I think that one of the best legacies that we would be able to leave as a generation, is probably a better world for our children, including a greener planet. And in my view, connectivity would play a key role and be one of the key tools for working towards having a better and more sustainable world. And in this regard, I think that the strategies set by the Commission about the connectivity, everyone and everywhere goes in the right direction in order to help reach this objective. So I'm quite sure that in Europe we will discuss later what connectivity to everyone and everyone means.

5G connectivity can be understood as multi-dimensional. That means are we expecting to have zero latency everywhere? Or are we thinking of connecting 1,000 objectives per square kilometer in the middle of every forest in Europe? Well, I don't know. That probably needs to be discussed during this path to the Digital Decade. Meanwhile, Europe defines this needed level of coverage. **We all can agree that in any definition, in any case, investment in infrastructures, would be needed**. Here, I'm also sure the European Commission, regulators, or other administrations are working together to provide this long-term certainty for the huge investments needed for achieving these ambitious objectives. During the next couple of years, we will be discussing some regulations that affect the rollout of connectivity. I'm thinking, as other speakers mentioned, about the Broadband Cost Reduction Directive and the full potential of the European Electronic Communications Code.

The conditions allowing a fast and optimal rollout need to be ensured. And I'm sure here that the infrastructure-sharing model that Cellnex is pushing forward will continue to be fostered by European regulations. I would like to emphasize that, **to achieve those ambitious Digital Decade goals, the regulatory framework should foster the long-term industrial investors before eventual opportunistic and speculative behaviors that can make the path more difficult**. Another interesting proposal from the Digital Decade is the need for 10,000 climate-neutral high security edge nodes. Edge nodes will grow for sure in the 5G world, and even in the 6G world, as we will see in the future. And I think that this is a great strategy to reduce its carbon footprint from the start. So I think that's a great idea.

In my view, a third dimension that we should tackle is the social dimension. As a society, we should explore the benefits that connectivity can provide in terms of social inclusion, social equality and opportunity for everyone. At this regard, the Digital Decade proposal regarding citizen skills and improving equality among different Europeans looks like a great way forward.

Regarding next year's work, I think that Jean-Pierre and Maarit would agree that we have plenty of work ahead of us. And for sure, this roadmap needs to be proposed by the different Member States. Also the new modelling system and the strategic growth margin and so on will keep us busy. Also, I think that these mechanisms to support the implementation of multi-country projects is a good strategy forward and we need to see how it would be implemented.

In summary, we congratulate and welcome the Commission's decision. Now it's time to discuss what we'll put in the middle, that is, the furniture that we need to work for. It's time to work together — administrations, industry, and so on – to share the work and start working on the path to the Digital Decade. Because at the end of the day, we all have a shared goal which is to build a better Europe, a more connected Europe and to have to overcome any clue of a digital divide.

## Questions raised to the speakers raised by the moderator

Jordi Salvador: Thank you, Jaume. Your comment brings me to the question I wanted to ask Jean-Pierre about reaching these targets of the digital compass. This won't be possible with inadequate infrastructure. **But how can independent wireless infrastructure operators contribute to long-term investment securities for 5G deployment in order to provide the needed infrastructure to achieve these targets defined in the Digital Decade?**

JEAN-PIERRE FAISAN
Chair of Communications working group at the EWIA, the European Wireless Infrastructure Association

I think this comes back to our business model. To explain it simply, in our business model, wireless service operators, that is MNOs, emergency services, IoTs and verticals are outsourcing a part or all of their passive infrastructure, and in some cases more than passive, to independent wireless infrastructure operators. It is sometimes passive infrastructure, a tower or a rooftop, but it can also extend sometimes to fiber-connected small cells, distributed antenna systems, or even edge data centers, which will play an important role in the 5G era.

I'd like to emphasize two points. First, from the financial standpoint, our customers can either sell part of their existing infrastructure to independent wireless infrastructure operators. And this provides upfront financing that flows to them immediately, which they can reinvest in 5G services or in active parts of their networks for the rollout. So concretely in front of the financing gap that is needed, we can provide upfront financing. Also, in some cases, the customer will find access to an existing site. For them, it means avoided upfront capex because they don't have to create infrastructure. Or they can ask an independent tower to build new sites. And here again, it's avoiding upfront capex. It has been assessed that if the outsourcing rose to about 50 percent of the infrastructure, which we've seen is not unrealistic compared to other regions, up to €28 billion could be released through the period until 2029. For the digital compass, this is a simulation which has been done very scientifically by EY, although it's still a simulation. What is very interesting is that it's backed up by facts since 2018 and until 2020, where the share rose from 17 percent to 20 percent, €3.5 billion were released actually, and flowed to the MNOs who entered into sale and leaseback agreements. And in addition, there were substantial commitments to build new sites for the upcoming years. And at the end of 2020 and 2021, many very sizable deals were announced. So this is not just promises, this is something which is happening and which is market led. The second point I'd like to emphasize is that not only can we provide or bring somehow upfront financing, which we draw from other sources than the ones which cannot withdraw them from infrastructure funds, but also the business model is valuable in that it is economically efficient. This is because independent players have more customers on their infrastructure. This means that actually the cost, recurring costs, are less. Therefore, we're creating economic savings, which are estimated to be in the order of €31 billion under the same set of functions. In conclusion, the potential economic benefits for the Digital Decade are both significant and realistic. And they rely on the amplification of an emerging trend based on market forces.
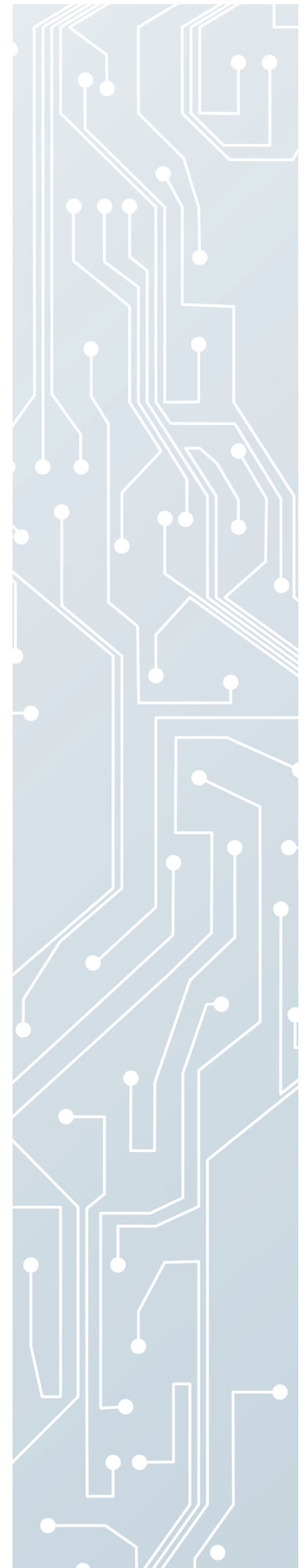
Jordi Salvador: Thank you, Jean-Pierre. Then I want to ask Maarit, from the point of view of telecom operators, **how are you planning to support the achievement of these targets? What are the key policy pillars needed to bridge this investment gap on connectivity?**

MAARIT PALOVIRTA
Director of Regulatory Affairs at ETNO, the European Telecommunications Network Operations association

I think we were alluding to many of them already. As I said earlier: the investment-friendly frameworks we are talking about, the transposition of the European code for electronic communication, as it hasn't yet been transposed in all the Member States. It is very important we get the basics right so that we have a good ground to start building and making the investments. And there are many good things within the code. For example, the co-investments. There are new ways of doing things, but it's very important that these measures are used to support the investment rather than making it perhaps too complex in terms of bureaucracy, etc. The second thing where we have been very active and actively also communicating with both the Commission, but also with local governments at the national level, is the cost reduction directive. And it really comes down to the very basics of connectivity. This means getting permits, coordination of civil works and access to buildings. There are many types of very practical considerations that we need to be quicker with and we need to again, align the processes across the Member States so that we can try and smooth out the differences. There are still differences between the digital leaders in Europe and those who are lagging behind. And I think that there's a way that we can learn a lot actually from each other. And certainly the European Commission and institutions can play a good role here to try and facilitate this dialogue between the Member States and, of course, including ideally us, the stakeholders.

And I would also like to say that innovation is also a key factor. We would also wish that our policymakers and we ourselves remain open for innovative approaches. And this could concern business models. I already mentioned co-investment. Also, if you look at, for example, fiber investments, which many of the ETNO members have been voluntarily announcing and their plans to roll out fiber, these were often made in some kind of joint venture mode. There is a proactive effort on behalf of the operators to try and attract investment towards the targets, and also ultimately so that we can have good infrastructure in Europe. And network sharing is a big thing that will and already does play a big role. Another thing maybe to mention is the Open RAN. The discussion may not be mature, but this type of new way of doing things can certainly make 5G deployment potentially more cost efficient and quicker. Perhaps one thing on the demand side that we are also doing as ETNO is use cases. I think that's been a big question mark, especially for 5G: do we really need it? And what does it actually serve? So we are making a proactive effort and we've now put forward some use cases – actual projects that our members are working on in the different Member States, whether it's in healthcare or manufacturing. This is to try and shine a light on it and make it a bit more transparent about how 5G makes a difference and what is the exact value. And why we actually do need 5G. So those are some of the things that I think where we have been active and where we would like also the Commission to work with us.

Jordi Salvador: I would like to put the last question to Cellnex: do you have any **specific initiative that you are undertaking in line with the path to the Digital Decade**, just to have something more concrete about how you can support achieving this target?

JAUME PUJOL
Head of Regulation
Cellnex

Thanks, Jordi, for the question. I was hearing Maarit and I was saying, Okay, lets speak about the specific projects. I think that's a great idea. And thanks for this. Well, as you know, as Cellnex, we are working on plenty of different projects exploring the full potential that the full connectivity to Europeans would bring. To quote some of them, we're exploring possibilities for augmented towers including private networks, broadcasting IoTs, smart cities and so on and so forth.

But if I may, let me concentrate on three different projects today. Indeed, we have just discussed the role of sustainability and the role in social responsibility that connectivity can play. In this regard, I'll briefly describe three different projects which are 5GMED, detection and response of unwanted loneliness and social isolation and then LEAN.

Regarding 5GMED, 5GMED is 5G Mediterranean, which is an IPS 5G corridor cross-border project. That means that 5GMED is testing the state of the art of the ITS (ITS means Intelligent Transport System technologies) such as the SECAM or FMNCS. I will skip the technical details but, at the end of the day, this project is testing how both, cars and trains, both transport systems, can work and can be managed under the 5G network.

We are working on Figueres-Perpignan, a 65-kilometer cross-border corridor between Spain and France. The idea is to enable a multi-stakeholder computer networking infrastructure. This has been deployed by MNOs and neutral host, together with the road and rail operators, and is based on 5G technologies and supporting artificial intelligence functions.

Some of the topics that we are analyzing include the possibility of cross-operator service orchestration. As you can imagine, it is a big challenge to manage heterogeneous networks. It's not easy and we need to be sure that it works. Another topic is innovation in multi-connectivity, supporting high speed vehicles and trains with self-sustainable 5G access network infrastructure; also to speed up roaming transition and MNOs, across MNOs and natural hosts; the ability to support artificial intelligence enabled functions, executing at the edge of the network.

With this 5G network project, what we are doing is to analyze the different technologies. And we are trying the Multi-Country Project framework. Here is where I got happy because we've seen in the Digital Decade in the back to the Digital Decade, the European Commission is also setting a mechanism for supporting such multi-country projects. We will see how it works. We are sure that this would help for these kinds of projects, which are among the most challenging projects that we can undertake.

The second project responds to unwanted loneliness and social isolation. At the end of the day, this is a project we are, frankly speaking, quite proud of, because the general objective of this project is to use 5G technology, artificial intelligence, whatever technology, for helping people. We think that this is quite amazing. The project is a joint effort, together with partners like the Red Cross, la Caixa, Vodaphone, and others. Unfortunately, we have to agree that unwanted loneliness is considered one of the silent epidemics of the 21st century. And it's one of the main social problems existing today. So if we can help here, we should do something. This project, the one we're undertaking, is assessing how, with
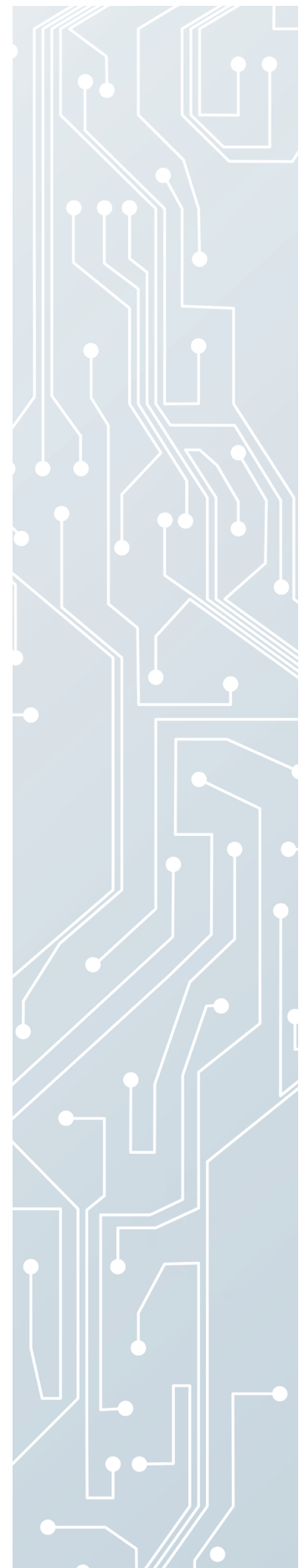
connectivity, we will be able to detect, analyze and propose early solutions to possible problems for people affected by social isolation and unwanted loneliness. Some specific measures that we're analyzing are how to optimize the procedures for diagnostics and the identification of needs; how to incorporate an artificial intelligence and other techniques for better real-time decision-making; and how to create environments for taking care of people who are lonely. So here again, we're exploring how the latest technologies can help society.

Thirdly, the LEAN project is an initiative to reduce the digital divide in rural areas. This project is looking for an economic, environmental, sustainable alternative to the difficulties of rolling out networks in rural areas. We have designed a site powered by solar and wind energy that would be able to offer mobile broadband connectivity, 4G, 5G, tomorrow 6G and others, together with advanced services such as IoT and edge computing. One key issue that needs to be solved – and is an open question for regulators and for administration and that we should be able to solve together – is how to finance these rural deployments. From a technical point of view, we would be able to design an optimum site, but there is the issue of financing. Here we should find how industry, administrations and public funds can work together to deploy the solution, including, not only the passive part, but also the active one. So let's work together and see how we can achieve this Digital Decade objective.

XAVIER VIVES
PPSRC Academic Director
Chair

Thank you very much for your intervention. We are over time. But I have one question, one general question, which in fact is for you, Kamila. I also see Krzysztof connected to it, so you could also chip in if you want to. Regarding the investment gap issue, we have talked about particularly 5G. From the perspective of the private sector, I would say that some of the network operators tend to think that there are some regulatory obstacles to filling the investment gap. There is sometimes an overly strict implementation of competition policy or merger policy that gets in the way. Do you think that there is an issue here or not? So **how you will see these potential regulatory or competition policy issues, to fill the investment gap**, also in the context that we are lagging somewhat behind other areas?

KRZYSZTOF KUIK
PHead of Unit, State Aid
DG COMPETITION, European Commission

A couple of points. First, I obviously speak from the competition standpoint, and you will not be surprised to hear that speaking in my private capacity, now, I do believe that competition is the driver for better services, better performance and lower prices. That's been confirmed over and over again, regardless of the industry. I will not discuss the merger policy at this point. I think there are well-known views about that and there may be a disagreement. I think it's just fair to say that there is no magic number for us in DG competition. We review each transaction on its own merits. And in some cases, we intervene requiring remedies. In some cases, parties abandon the transactions. In some cases, the transactions go ahead. In some cases, they are blocked. I think there is a variety of situations. I will just take an issue actually with the fact that we're lagging behind with 5G. To my knowledge, one of the main factors is we just have had a late start. The licenses

have not been granted in America. In countries that had a license process, it hasn't been completed, and therefore the operators haven't yet started fully employing the networks. I think that's one of the arguments. There is also another one, which is the operators start addressing consumer demand. Consumer demand for full-fledged 5G services is not yet there. And that is maybe the reason why there is not stand-alone 5G rolled out first, which increases the quality of service, the level of performance, but doesn't go in a full way to 5G, proposing it and making marketing announcements already – in Germany, as well as in Spain – about very wide coverage of 5G for consumers. It may be a bit premature to talk about lagging behind in a material way, at least. We have had similar arguments regarding fixed rollouts in the past compared with the US. I participated in the FTDH Council Conference last week and the numbers were quite clear that, for fixed rollout, Europe is now ahead of the US in terms of very high-capacity networks. So that would be my first response to that question. Now, as I mentioned and Alexandra continued with her presentation, does it mean that there is no space to potentially provide support for 5G rollouts in certain specific circumstances? No. I think we were already taking steps in that direction. But I think that we shouldn't forget: we already have a track record of different generations of mobile networks. And like in other areas, so far, these networks have been successfully rolled out in Europe with virtually purely private investments. And I think that the role of the private sector, that should be maintained. That is the driver. The driver for the investment is largely competition between the operators.

## XAVIER VIVES
PPSRC Academic Director
Chair

Thank you very much. We have one more question from the audience that I would like to put to also both of you, Kamila and Krzysztof, and with this we'll close. It's a relatively specific question, but probably it is worth putting. And it reads as follows: "Though the recent relevant market recommendation is more than welcome, there still persists some inertia among national regulatory authorities, and as such, the Spanish national regulatory authorities are proposing, not committing to current recommendation, but to mandate all markets 1, 2, and 3 B, which in light of current Spanish infrastructure competition seems to be fully outdated." That's what is claimed here. "**Is the European Commission aiming to follow up such market analysis, aiming to push to become fit for purpose for the horizon of 2030**?"

KAMILA KLOC
Head of Unit B3 Markets in Directorate B Connectivity
DG CONNECT

I think this is a question more for me than Krzysztof, so I will take this one. Although I might want also to complement a little bit from my perspective what Krzysztof said, which is again connected with Digital Policy Programme. First of all, I think we all agree that indeed competition is the driver of investment. And we all agree as well that the majority of the investments will be made by the private sector. So one of the tools that I was also trying to underline, which is very important, is that multi-country projects – we are talking here about the mixing of private and public money as well — are something which we also should take into account when we are discussing this. And finally, one extremely important point that Krzysztof mentioned in the context of 5G, is the allocation of spectrum. This is, of course, of great importance for us and one of the very important elements that I didn't
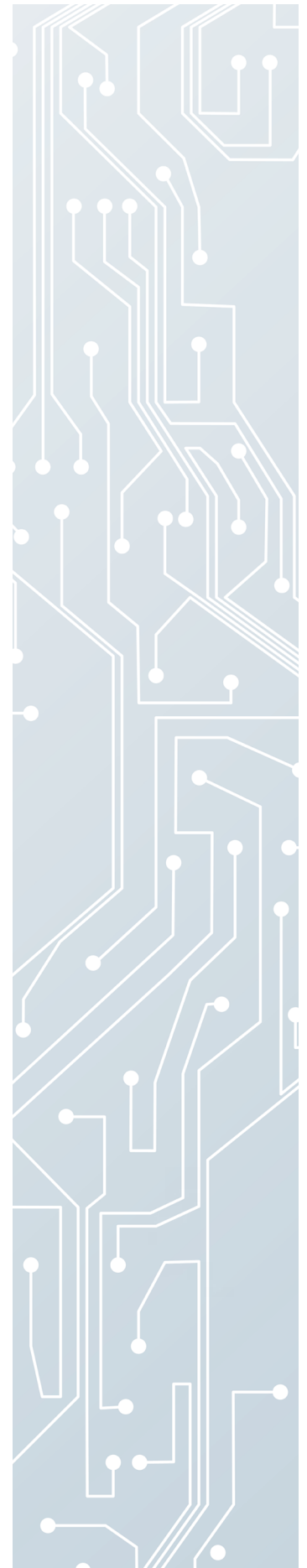
mention in the Digital Policy Programme. We did mention that spectrum is one of the most important or the main enabler to achieve the targets under the connectivity. And we do envisage follow-up actions also as a follow up of the consultation that we did when many of the stakeholders were really underlining better coordination of the spectrum as one of the main obstacles. So that's a bit to add to Krzysztof's. On the recommendation, the relevant markets I did mention at the end of my presentation. Not because it's not important, quite the contrary, it is a very important recommendation that we issued. But I will now elaborate a little bit on the context of the question asked. First of all, regarding the recommendation on the relevant markets, what we did, and this is a general trend that we observed throughout the years: we basically decreased the number of markets that we recommend for regulation at the EU level. It does not mean this is limited under this new review. We're talking about fixed networks and to the dedicated capacity market, where we still see, across the EU, that there are problems. There might be problems from the perspective of competition and also requiring regulatory action. In setting this recommendation and related a bit to the question regarding the Spanish market, we did say that one of the most important remedies under the code is access to the ducts, access to this infrastructure, civic infrastructure, particularly nationally. We also indicated that in some cases it will even make sense to establish separate market for the ducts, for the civic infrastructure. And here, in the context of one of the recent market reviews that we had been assessing, the Spanish one. As my colleague asked and I'm sure the Commission also commented, in the future, such a separate civic infrastructure market – meaning also not necessarily regulating at the wholesale local access, but focusing it on the access to ducts – might be the best solution for Spain. Still, what we are doing under our regulatory practice is: first of all, all national regulatory authorities are notifying us of the measures concerning the access to the fixed infrastructure. We are assessing it in line with the code. We're assessing it in line with the recommendation of the relevant markets. And NRAs also need to make very careful assessment if indeed there are competition problems under the specific criteria, including the possibility for the market to develop for efficient competition. And this assessment is very closely monitored by us. If we disagree with this assessment, we can also, under the Code provisions, veto the decision of the NRA. So I think the answer is very simple. We are looking into all microtrivials, we are looking into all of them. This is imposed in terms of access very closely under the current framework, in cooperation with the NRAs. And when we see that there are elements so that the regulation is not necessary, or if we see that regulation might be necessary, we may intervene and we do it.