

The regions in the digital single market

ICT and digital opportunities for European regions

SUMMARY

The digital economy is growing at seven times the rate of the rest of the economy. The European Commission estimates that completing the digital single market could contribute €415 billion per year to Europe's economy, create 3.8 million jobs and transform public services. In addition, many future jobs will require information and communications technologies (ICT) skills, rendering the process of acquiring digital skills an imperative.

The European Commission has presented several initiatives to boost the use of ICT in Europe. The Digital Agenda for Europe, announced in 2010 in the framework of the Europe 2020 strategy, aimed at promoting economic recovery and improving social inclusion through a more digitally proficient Europe. The Digital Single Market strategy, introduced in 2015, complements the Digital Agenda for Europe. Achieving a digital single market will ensure that Europe maintains its position as a world leader in the digital economy, helping European companies to grow globally. In 2016, the European Commission adopted a new Skills Agenda for Europe which includes measures on the acquisition of digital skills.

Although many of the digital single market priorities are primarily dealt with at national level, various initiatives can be explored at the local and regional level. Regions and cities can plan and pursue their own digital strategies in the interests of enhancing economic growth and to promote their citizens' wellbeing. Enhanced use of digital technologies can improve citizens' access to information and culture, promote open government, equality and non-discrimination. However, a number of challenges need to be addressed to fully reap the benefits of digitalisation. Personnel with ICT skills are still lacking in Europe and many European citizens are not adequately trained to carry out ICT-related tasks. In addition, broadband connectivity in some parts of Europe remains slow. Although certain EU regions and local authorities experiment with new technologies, not all of them have managed to provide a high-level range of digital services and ICT related activities.

This briefing is an update of an [earlier edition](#), published in October 2015.



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Introduction

The development of the [Digital Agenda for Europe](#) (DAE) was evidence of the EU's recognition of the importance of information and communications technologies (ICT). The agenda formed one of the seven pillars of the [Europe 2020 strategy](#), which set objectives for sustainable growth in the EU up to 2020. The DAE aimed at better exploitation of ICTs' potential to foster innovation, economic growth and progress. Its main objective was the development of a digital single market that would generate smart, sustainable and inclusive growth in Europe. In particular, local and regional authorities (LRAs) could get more involved in the [research and innovation](#), [enhancing digital literacy, skills and inclusion](#) and the [ICT-enabled benefits for EU society](#) pillars of the DAE.

In 2015, the European Commission presented the [Digital Single Market \(DSM\) strategy](#), which it had identified as one of its [10 political priorities](#). The strategy aims at opening up digital opportunities for people and business and enhancing Europe's position as a world leader in the digital economy. It is built on three main pillars: (1) better access for consumers and businesses to digital goods and services across Europe; (2) creating the right conditions and a level playing field for digital networks and innovative services to flourish; (3) maximising the growth potential of the digital economy.

The Commission's strategy on [connectivity for a European gigabit society](#), adopted in September 2016, sets out a vision of Europe where availability and take-up of very high capacity networks enable the widespread use of products, services and applications in the DSM strategy. This vision relies on three main strategic objectives for 2025: Gigabit connectivity for all main of socio-economic drivers; uninterrupted 5G coverage for all urban areas and major terrestrial transport paths; and access to connectivity offering at least 100 Mbps for all European households. It confirms and builds upon the previous broadband objectives set to give every European access to 30 Mbps connectivity and half of the households a subscription at 100 Mbps by 2020. The vision furthermore calls for [5G connectivity](#) to be available in at least one major city in each Member State by 2020 at the latest.

In 2016, the European Commission also adopted a [new Skills Agenda for Europe](#) which includes measures for the acquisition of digital skills.

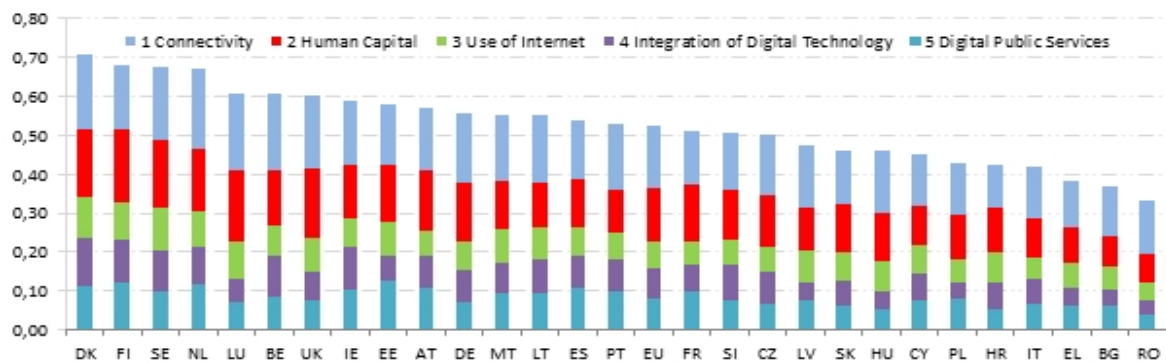
In the European Commission's work programme for 2017, '[Delivering a Europe that protects, empowers and defends](#)', the European Commission proposed to advance swiftly on proposals that had already been put forward and to undertake a review of the progress made towards completing the digital single market.

State of play

Various indicators point to the fact that there is a digital divide in the EU, with certain EU Member States more digitally advanced than others. The European Commission published the results of the 2017 Digital Economy and Society Index (DESI), a tool presenting the performance of the 28 Member States in a wide range of areas, from connectivity and digital skills to the digitalisation of businesses and public services. DESI, shown in Figure 1, measures Member States' progress under five main headings: connectivity, human capital, use of internet, integration of digital technology by businesses, and digital public services.

Considerable differences can be seen in performance from country to country (Figure 1). Overall, the EU has progressed and improved its digital performance by 3 percentage points compared to last year, but progress could be faster and the picture varies across Member States (the digital gap – between the most and least digital countries – is 37 percentage points, compared to 36 percentage points in 2014). Denmark, Finland, Sweden and the Netherlands lead the DESI this year, followed by Luxembourg, Belgium, the United Kingdom, Ireland, Estonia, and Austria. The top-three EU digital players are also the global leaders, ahead of South Korea, Japan and the United States. In the EU, Slovakia and Slovenia have progressed the most. Despite some improvements, several Member States still lag behind in their digital development, compared to the EU average.

Figure 1 – Digital Economy and Society Index, 2017

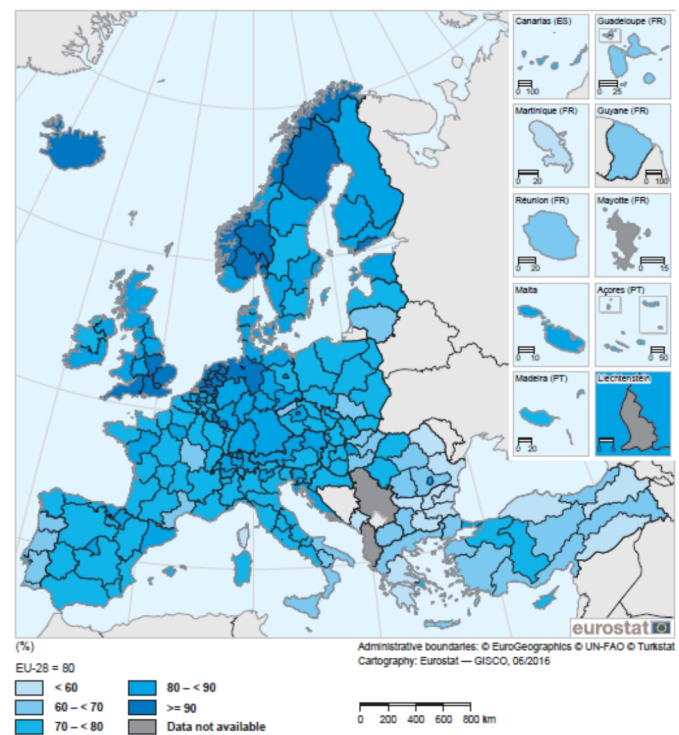


Source: [European Commission](#), 2017.

In addition, according to the [Eurostat regional yearbook 2016](#), there was a high share of broadband access across many regions in northern and western parts of the EU, particularly in the United Kingdom, the Netherlands, Luxembourg, the Nordic Member States and Germany as Figure 2 shows. On the other hand, broadband connectivity rates were particularly low in some parts of eastern and southern Europe.

The digital divide is also evident as far as the regularity of internet use as is concerned, as seen in in Figure 3. Looking in more detail at the regional results, data are available for 135 regions out of the 205 in the EU-28, where at least 75 % of the population (aged 16 to 74) made regular use of the internet in 2016 (as shown by the darkest three shades of orange). There was an almost even split between the number of regions (99 regions) with a value above the EU-28 average, and the number with a value below (101 regions).

Figure 2 – Proportion of households with broadband connections, 2015



Source: [Eurostat regional yearbook 2016](#).

Opportunities for regions and cities

Local and regional authorities (LRAs) may develop digital strategies to benefit from the full potential of digital opportunities. They can also put forward demands and ideas for further digital services to their national governments. European regions and cities may invest in digital technologies covering a number of different fields, some of which are mentioned below.

Smart innovative cities and regions

Regions and cities can use [ICT capabilities](#) in various ways to establish smart innovative strategies through smart specialisation. The EU puts considerable emphasis on smart specialisation, as it helps EU regions to develop their full potential by focusing on their strong points. [Smart specialisation](#) is

a strategic approach to economic development through targeted support for research and innovation (R&I). It involves a process of developing a vision, identifying competitive advantage, setting strategic priorities, and making use of smart policies to maximise the knowledge-based development potential of any region, strong or weak, high-tech or low-tech.

Regulation (EU) No 1303/2013 specifies that a smart specialisation strategy: 'means the national or regional innovation strategies which set priorities in order to build competitive advantage by developing and matching research and innovation strengths to business needs in order to address emerging opportunities and market developments in a coherent manner, while avoiding duplication and fragmentation of efforts; a smart specialisation strategy may take the form of, or be included in, a national or regional research and innovation (R&I) strategic policy framework'.

ICT can help to improve living, working and business conditions in EU regions. For instance, in smart cities, ICTs are used to improve public services and quality of life, improve the use of resources, and reduce environmental impact. In addition, LRAs can improve [energy efficiency](#) through the renovation of their own buildings. Reducing energy use saves money, and also reduces the amount of CO₂ emitted into the atmosphere – a major driver of climate change. Regions and cities can also [improve local transport](#) and reduce congestion.

Promotion of digital technologies in rural and remote areas

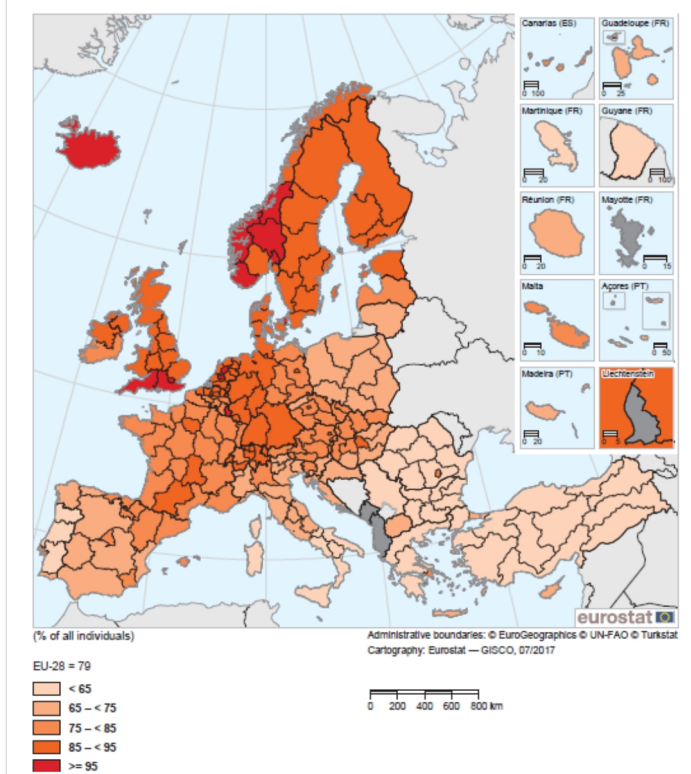
Wide differences persist in the availability of broadband within EU Member States and in their regions. In particular, remote, rural, mountainous and/or island areas, where population density is low, lag behind urban areas in terms of broadband infrastructure. Cities and capital regions recorded the highest shares of regular internet users in most EU Member States. Figure 4 shows the differences in broadband connections in households by degree of urbanisation. LRAs in these areas have a crucial role to play in addressing the regional digital divide through the setting up of smart specialisation and ICT projects.

Job creation

More skilled ICT professionals are needed in all sectors of the economy. According to the [European Commission](#), it is estimated that 825 000 vacancies for ICT professionals will be unfilled by 2020. According to a March 2018 [speech](#) by Commissioner Mariya Gabriel, Europe is experiencing a shortage in ICT specialists, with at least 350 000 vacancies today.

According to [Eurostat](#), businesses in all countries reported difficulties in recruiting ICT specialists, particularly in the Czech Republic, Slovenia, Luxembourg, Austria, Belgium and Estonia, whereas 41 % of businesses trying to recruit ICT specialists report difficulties in finding qualified people. Furthermore, a wide range of ICT skills are now needed in many professions. However, many

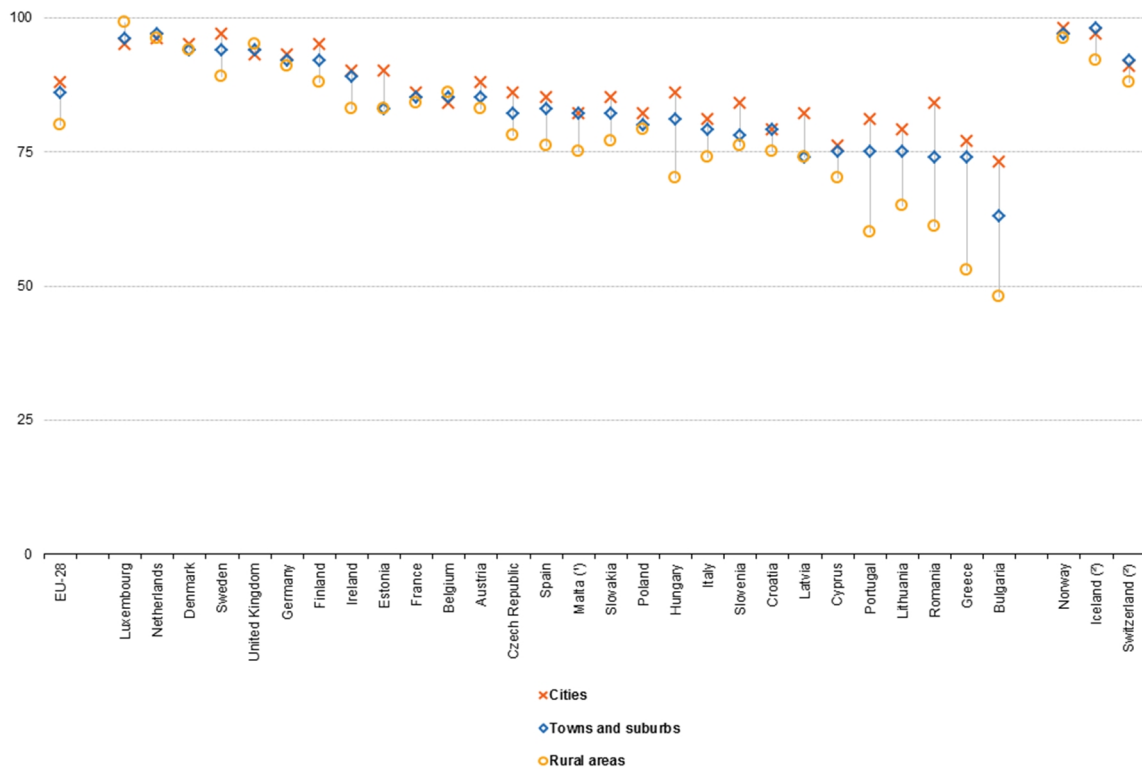
Figure 3 – Proportion of individuals regularly using the internet (% of persons who accessed the internet on average at least once every week), 2016.



companies, especially SMEs, do not have the know-how and the operational capacity to benefit from digital technologies.

LRAs can encourage their constituents to learn ICT skills, thus improving their employability. Digital opportunities may also be explored to set up [regional clusters](#), promote local products, and help to attract investors and tourism to LRA areas.

Figure 4 – Broadband connections in households, by degree of urbanisation (2016) (% of all households)



Source: [Eurostat](#), 2016.

e-education

LRAs are well placed to address the needs of their constituents with suitable educational programmes. Regions and cities may offer a range of e-education and e-learning opportunities, ranging from vocational training to lifelong learning. Education institutions run by LRAs may also explore open education resources (OER) and massive open online courses (MOOCs) to boost citizen participation. ICT may also provide new opportunities for cooperation between LRAs and [universities](#), bringing new know-how to regions and cities. Even the most remote regions can set up innovative partnerships and cooperative projects with universities aimed at promoting educational and scientific activities within their remit.

e-inclusion

Enhancing digital literacy, digital skills and knowledge is just as important as reading, writing and arithmetic in today's society. Those parts of society that do not have computer skills or easy, affordable access to the internet may find themselves increasingly excluded from society in the absence of programmes to help them make up for those gaps. Knowledge can become more accessible to all by lowering costs and enabling better access to digital services. Regions and cities are well positioned to know the needs of citizens and to offer high quality projects aimed at supporting the vulnerable groups within their remit. Emphasising digital skills and education is also

necessary to better balance gender participation in ICT professions. E-inclusion also has an important gender dimension: a European Commission study on [women in the digital age](#) confirms that only 24 out of every 1 000 female graduates study an ICT related subject – of which a meagre 6 go on to work in the digital sector.

e-government

LRAs may invest in the digitalisation of their services, as effective e-government strategies can provide a wide variety of benefits, including more efficiency and savings for governments and businesses, increased transparency, and greater participation of citizens in political life. E-government encourages new forms of participatory democracy and contributes to the communication of information on the projects that LRAs undertake. Rationalising and simplifying administrative procedures and services can reduce bureaucratic procedures and formalities, help bring down the administrative costs of doing business, and facilitate relations between individuals and public administration. The European Commission regularly reports on various [e-government practices in the EU Member States](#). Various [e-participation](#) projects also encourage people to engage in local politics and policy-making. Certain LRAs also invest in [cybersecurity strategies](#) to increase the e-safety of their services and protect their constituents' data.

Tourism and cultural heritage

Accessibility to Europe's cultural heritage is a key instrument in promoting understanding of cultural diversity, uniting people in a multilingual, multicultural Europe, and increasing economic potential in areas such as tourism. E-culture projects usually promote the digitisation of cultural content and cultural heritage, and the use of ICT for cultural production and consumption. Regions and cities can explore a number of ICT possibilities to promote their cultural heritage and cultural projects, and events outside their borders. Digital platforms such as [Europeana](#), Europe's online library, museum and archive, illustrate the possibilities to provide access to Europe's cultural and scientific heritage to all via the internet.

e-health

ICT can contribute to more efficient social care and health monitoring, by providing European citizens with better and cheaper services for health and [ageing well](#). The introduction of ICT in telemedicine is an example of new technologies allowing for outreach to citizens. ICT can help older people to stay healthy, independent and active at work or in their community. ICT can also be used to develop [silver economy opportunities](#), ranging from age-adapted accommodation and public services, to promoting remote care and health monitoring. The European Commission funds several [projects](#) in this field.

Trans-border cooperation

New forms of digital cooperation may spur further interaction in the ICT field. Various trans-border networks have been formed to promote inter-regional and inter-city cooperation to tackle ICT challenges at European level. The communication opportunities provided by new ICTs are vital to maintaining these forms of cooperation. The European Regions Network for the Application of Communications Technology ([ERNACT](#)) platform is one example. Another venture, the [ONE project](#), aims at improving regional capacity for planning investments in ICT through setting up a network of regional 'observatories' in Cyprus, the Czech Republic, France, Germany, Italy, Poland and the UK.

European Parliament support

The European Parliament (EP) has been consistently supportive of efforts to foster development of broadband infrastructure and ICT.

In its 2017 [resolution](#) on building blocks for a post-2020 EU cohesion policy (rapporteur: Kerstin Westphal, S&D, Germany), the Parliament points out that the digital agenda, including the provision of the necessary infrastructure and advanced technological solutions, must be a priority within the framework of cohesion policy, particularly in the next EU funding period (from 2020). It also notes that developments in the telecommunications sector must in any case be accompanied by appropriate training, which should also be supported by cohesion policy.

In 2017, Parliament also adopted the legislative proposals of the European Commission as regards the [promotion of internet connectivity in local communities](#) (rapporteur: Carlos Zorrinho, S&D, Portugal). The proposal provides that entities with a public mission such as public authorities and providers of public services, wishing to offer free local wireless connectivity through local access points, will benefit from financial assistance. Funding for local public authorities to provide access points in centres of local public life, including outdoor spaces accessible to the general public, will be prioritised in the first phase of the intervention. To ensure the targeted nature of the intervention and to realise maximum public benefit, funding will be limited to situations where no freely accessible public or private access points delivering very high-speed broadband exist. Furthermore, funding will be awarded in a geographically balanced manner.

In another 2017 [resolution](#) on internet connectivity for growth, competitiveness and cohesion: European gigabit society and 5G (rapporteur: Michal Boni, EPP, Poland), the EP stated that a competitive legislative framework and initiatives are required, which encourage investments in infrastructure, particularly in order to tackle the digital divide between urban and rural areas.

In the EP [resolution](#) of 2016 on the special situation of islands (rapporteur: Iskra Mihaylova, ALDE, Bulgaria), it was mentioned that digital capacity is a vital means of counterbalancing the connectivity handicaps experienced by island regions. The resolution stated that investments in infrastructure are required in order to ensure broadband access on islands, as well as their full participation in the digital single market.

In its 2016 [resolution](#) on cohesion policy in mountainous regions of the EU (Iliana Iotova, S&D, Bulgaria), the EP considers that the internet and, specifically, next-generation access (NGA) technologies play a crucial part in overcoming the challenges faced by mountainous regions. It calls on the Commission to take the lack of infrastructure into account, as well as low investor interest owing to the sparse population and remoteness of mountainous regions, and to develop specific policies for overcoming the digital divide in these regions, including through the necessary public investments. It notes that ICTs offer a wide range of opportunities for employment, social inclusion and empowerment in the emerging digital economy and that specific support from ESI funds is needed for the promotion of such opportunities. It calls on the Member States to promote teleworking, e-commerce and the use of digital marketing channels in these areas to improve companies' cost management. Parliament considers that easier access to new information technologies could lead to the development of distance education programmes in areas with a shortage of teachers, as well as e-health services, which might help prevent the depopulation of mountain areas. It also calls for examples of good practice to be proposed and shared, and thus contribute to the economic diversification of mountain regions.

In another 2016 [resolution](#) on cohesion policy and research and innovation strategies for smart specialisation (RIS3), (Ramon Luis Valcárcel Siso, EPP, Spain), the EP calls on all actors involved to develop RIS3 on the basis of analyses of each region's existing capabilities, assets and competences, and to focus on entrepreneurial discovery in order to detect emerging niches or comparative advantages for smart specialisation. It states that smaller regions have more problems in developing and implementing strategies, and calls for the development of proposals to increase support for such regions, to enhance the implementation of the S3 strategies and exchange of best practices. Parliament regrets that some Member States have decided to opt for national RIS3 without giving local and regional authorities a chance to develop their own views. It reiterates the key role that urban areas have to play in the economic and social development of the EU by acting as hubs for

various actors and sectors, combining the challenges and opportunities of smart, sustainable and inclusive growth. Finally, Parliament criticises the lack of synergies across ESI funds and other EU financing instruments, which hinders coordination, coherence and integration in EU funding.

The EP has emphasised the importance of ICT investment in a 2015 [resolution](#) on the European Fund for Strategic Investments, in which it suggested that EFSI should support projects for the development and deployment of ICT, including projects of common interest which aim to complete the internal market in the field of telecommunications and digital infrastructure.

Opinions of the Committee of the Regions

In its 2018 opinion on [boosting broadband connectivity in Europe](#), the CoR states that a strong cohesion policy, in combination with other financing instruments, is key to boosting broadband connectivity in Europe. It points out that lack of fast and reliable broadband coverage remains a problem in many rural and sparsely populated areas where there is not enough market-driven development. It points out that, according to the seventh cohesion report, more investment will be needed as the faster next-generation access (NGA) is only available to 40 % of rural residents compared with 90 % in urban areas. The CoR draws attention to the important role that ICT infrastructure and broadband, together with capacity-building, can potentially play in the restructuring of rural regions in response to population decline. It takes the view that there are a number of major challenges that need to be addressed, such as limited very high speed connectivity for fixed and mobile infrastructure throughout the EU; the risk of insufficient capacity to deal with rapid market and technological change; and administrative burdens resulting from over-regulation and lack of consistency, including state aid rules. The CoR also states that public institutions, schools and education establishments should be equipped with high-speed broadband connections and notes, that in some countries and regions, limited technical knowledge and a lack of information on funding options for broadband infrastructure and on best practices can also be problematic.

The CoR's 2013 opinion on [reducing the cost of deploying broadband](#) pointed out that local and regional authorities should become involved in financing digital infrastructure in areas considered unprofitable by private operators, for example in rural areas. Europe's potential for developing ICT services could be used as a means of improving local and regional authority services in fields such as healthcare, education, public order, security and social services. LRAs, it noted, have a key role to play in coordinating demand for broadband access. However, the opinion points out that it is crucial for public institutions at regional and local level to have adequate in-house capacities and sustainable financial resources for digitalisation.

EU funding and other related opportunities

Various EU [funding opportunities](#) exist in the fields of research, broadband technology, ICT and smart specialisation. [European structural and investment funds](#) can be used strategically to: encourage the transposition of DSM legislative initiatives; the development of administrative capacity for effective application of this legislation; and the leverage of national public and private funding to enhance the positive impact of the DSM in all EU regions.

The European Commission has issued a [guide](#) for local and regional entities to assist them in planning investments in line with relevant policy objectives and rules. It provides practical tips to support public authorities in the preparation of broadband investment projects, including those co-financed from the [European structural and investment funds](#) and the [Connecting Europe Facility](#). The European Agricultural Fund for Rural Development (EAFRD) provides [opportunities](#) for innovation and research in the field of rural development, agriculture and forestry. A practical [guide for ERDF managing authorities](#) on the promotion of smart specialisation has also been issued. In addition, the European Maritime and Fisheries Fund (EMFF) offers [funding](#) for innovative actions in promoting sustainable and diversified local economies. Regions and local authorities may also benefit from the [LIFE](#) programme in order to promote ICT in the field of environmental protection.

Small and medium-sized enterprises can now obtain EU funding and support for innovation projects that will help them grow through the [COSME](#) and [Horizon 2020](#) programmes. The European Fund for Strategic Investments ([EFSI](#)) can finance digital projects and businesses in a number of areas. The European Investment Bank ([EIB](#)) may also be a lender for broadband-ICT ventures for LRAs. In the field of [digital cultural heritage](#), a number of EU projects have also received funding.

With the aim of [digitalising EU industry](#), the European Commission aims, amongst other things, to invest €500 million in a pan-EU network of digital innovation hubs (centres of excellence in technology), where businesses can obtain advice and test digital innovations. It also aims to set up large-scale pilot projects to strengthen the internet of things, advanced manufacturing and technologies in smart cities and homes, connected cars or mobile health services.

The Commission has set up a [smart specialisation platform](#) to provide information, methodologies, expertise and advice to national and regional policy-makers, as well as promote mutual learning and transnational cooperation. The European Innovation Partnership on Smart Cities and Communities ([EIP-SCC](#)) is another Commission initiative that brings together cities, industry and citizens to improve urban life through more sustainable integrated solutions, including on innovation, planning, energy efficiency, transport and ICT. The Committee of the Regions has also published a [study](#) to inform LRAs about the wide range of opportunities provided in the DSM.

The promotion of free wifi connectivity for citizens and visitors in public spaces such as parks, squares, public buildings, libraries, health centres, and museums everywhere in Europe can also be achieved through the [WiFi4EU](#) scheme, set up to support the installation of wifi equipment in centres of community life. In addition, the European Broadband Competence Offices ([BCOs](#)) network connects national and regional authorities supporting broadband deployment across the EU. BCOs provide legal, technical and financial guidance to project promoters and policy-makers to support stakeholders in their country or region in accelerating broadband roll-out.

[Digital Opportunity Traineeships](#) is another EU-funded training initiative which aims to help companies fill vacancies with digitally competent candidates. Digital Opportunity trainees strengthen their ICT-specific skills through work experience in fields such as cybersecurity, big data, quantum technology and machine learning, or boost digital skills in areas like web design, digital marketing, and software development.

The [Smart Villages](#) initiative aims at supporting a better quality of life, a higher standard of living, better public services for citizens, better use of resources, a lower impact on the environment and new opportunities for rural value chains. The concept covers human settlement in rural areas as well as the surrounding landscapes.

In 2018, the Commission presented its [digital education action plan](#), which sets out a series of initiatives to support people and organisations in dealing with rapid digital change. The action plan focuses on the development of digital skills (skills, knowledge and attitudes) for work and participation in society more widely, the effective use of technology in education, and the use of data and foresight to improve education systems. Measures will include supporting schools by providing high-speed broadband connections, and SELFIE, a new Commission-developed self-assessment tool aimed at helping schools improve technology use in teaching and learning, as well as a public awareness campaign on online safety, cyber-hygiene and media literacy.

Outlook

The digital era offers opportunities for metropolitan centres, towns, villages, and rural and remote areas. Local and regional authorities can develop digital strategies in order to benefit from the full potential of the EU framework on digital technology. Local and regional projects on smart innovative technologies can promote job creation, offer e-education courses, and bring local government closer to citizens. Trans-border cooperation, the promotion of cultural heritage and tourism can all be boosted through broadband ICT technologies. ICT may also contribute to tackling

the challenges of social exclusion, promotion of gender equality and supporting the ageing population.

However, although high-speed broadband infrastructure is a prerequisite for global competitiveness, telecommunications services and digital infrastructure in the EU remain highly fragmented along national borders. EU financial support can be used to encourage market players to provide broadband, however, broadband infrastructure (especially in rural and remote areas) is still lacking. In addition, although progress has been made in ICT related activities, a considerable divide remains between ICT-advanced EU regions and those which lag behind. A considerable leap forward is necessary, both in ICT and broadband connectivity, for EU regions to be able to develop their full potential.

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