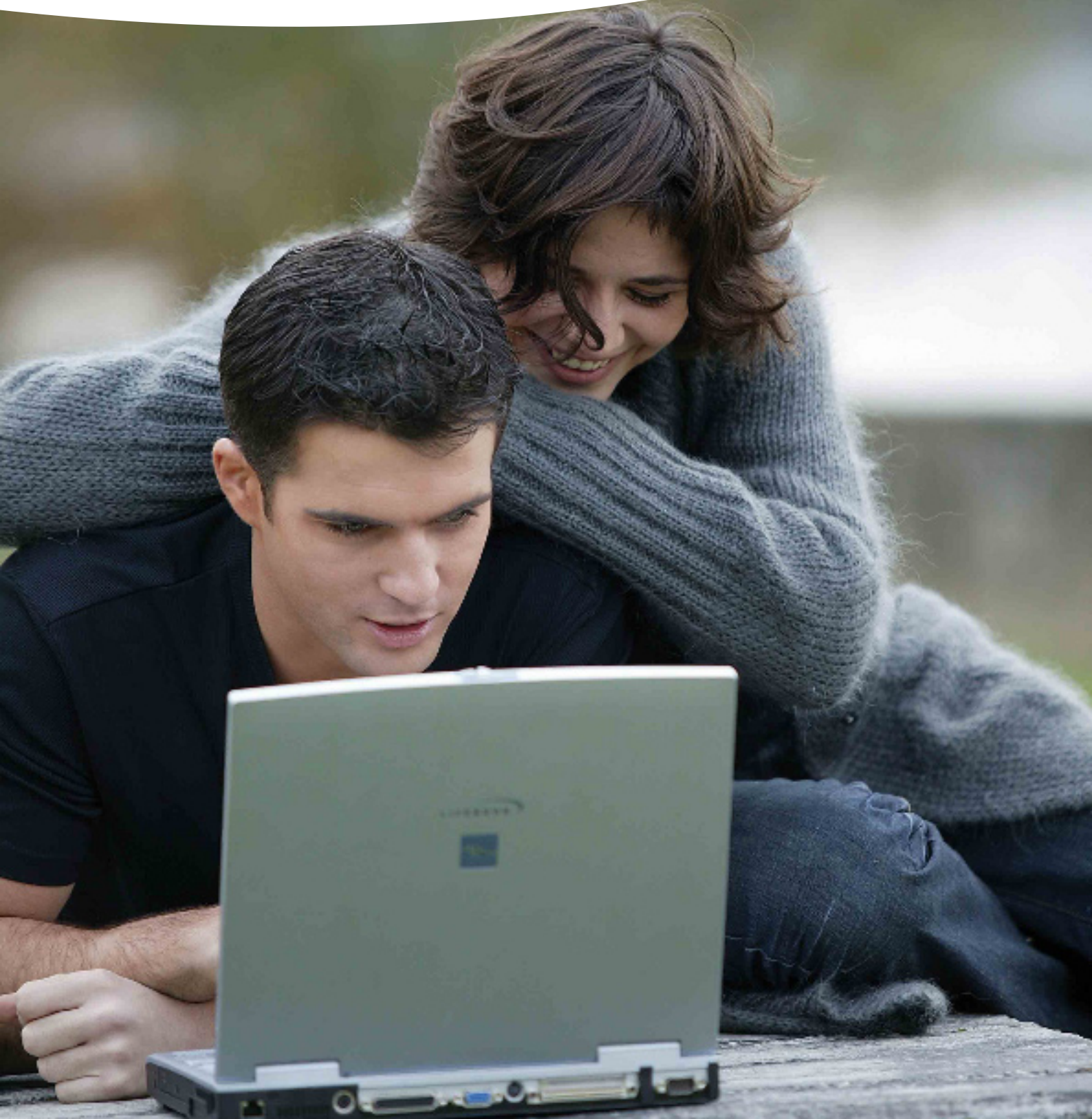


# Information society

# 8





The widespread use of the Internet and the web has led the development of what is often referred to as the information society. These developments have rapidly created new dimensions to economic, social and political participation for both individuals and groups. Online activities have become ubiquitous, and the geographic location where they are performed is generally no longer significant as long as a connection to the Internet is available. The term **digital divide** has been coined to distinguish between those who have **access to the Internet** and are able to make use of the services offered on the web and those who are excluded from these developments. This chapter emphasises the geographic aspects of the digital divide by presenting a range of regional statistical data on **information and communication technology (ICT)** within the **European Union (EU)**.

## Main statistical findings

The maps in this chapter show the level of Internet access and usage, including the proportion of persons who made online purchases in 2011. Regional data are generally available for NUTS level 2 regions — although the latest reference period is only available for NUTS level 1 regions in Germany, Greece, France, Poland and the United Kingdom and there are only national data available for Slovenia. Data are also presented for Iceland, Norway, Croatia, the former Yugoslav Republic of Macedonia, Serbia and Turkey — although this is mainly available at a national level.

### Access to information and communication technologies

Access to ICT is at the heart of the digital divide: although geographic location is just one aspect of this divide, as there are also wide ranging differences in Internet connectivity between various subgroups of the population, for example, when broken down by age or by household income.

Statistics on Internet connections and broadband access are closely related, as broadband is a specific type of Internet connection that has, in recent years, accounted for an increasing share of the Internet market (by type of connection). Efforts have been made to expand both the geographic reach and the speed of broadband Internet across the EU and by 2011 around two thirds (67%) of all households in the **EU-27** had broadband Internet access at home — a share that rose to 72% in 2012. The relative importance of broadband Internet access grew at an **average annual rate** of 11.4% within the EU-27 from 2007 to 2012, which was slower than during the preceding 5 years, reflecting the fact that broadband connection rates were approaching saturation in some regions.

Map 8.1 shows the take-up of broadband connections by households in 2011. There was a particularly high concentration of

broadband access across the Nordic Member States, northern Germany and the Netherlands, as well as in the **EFTA** countries of Iceland and Norway. Many of the regions in these areas reported broadband connection rates well above the 67% average for the whole of the EU-27. Iceland (92%) recorded the highest proportion of households with a broadband Internet connection in 2011, while Stockholm (Sweden) was the only region in the EU to record in excess of 9 out of every 10 households with a broadband Internet connection (91%).

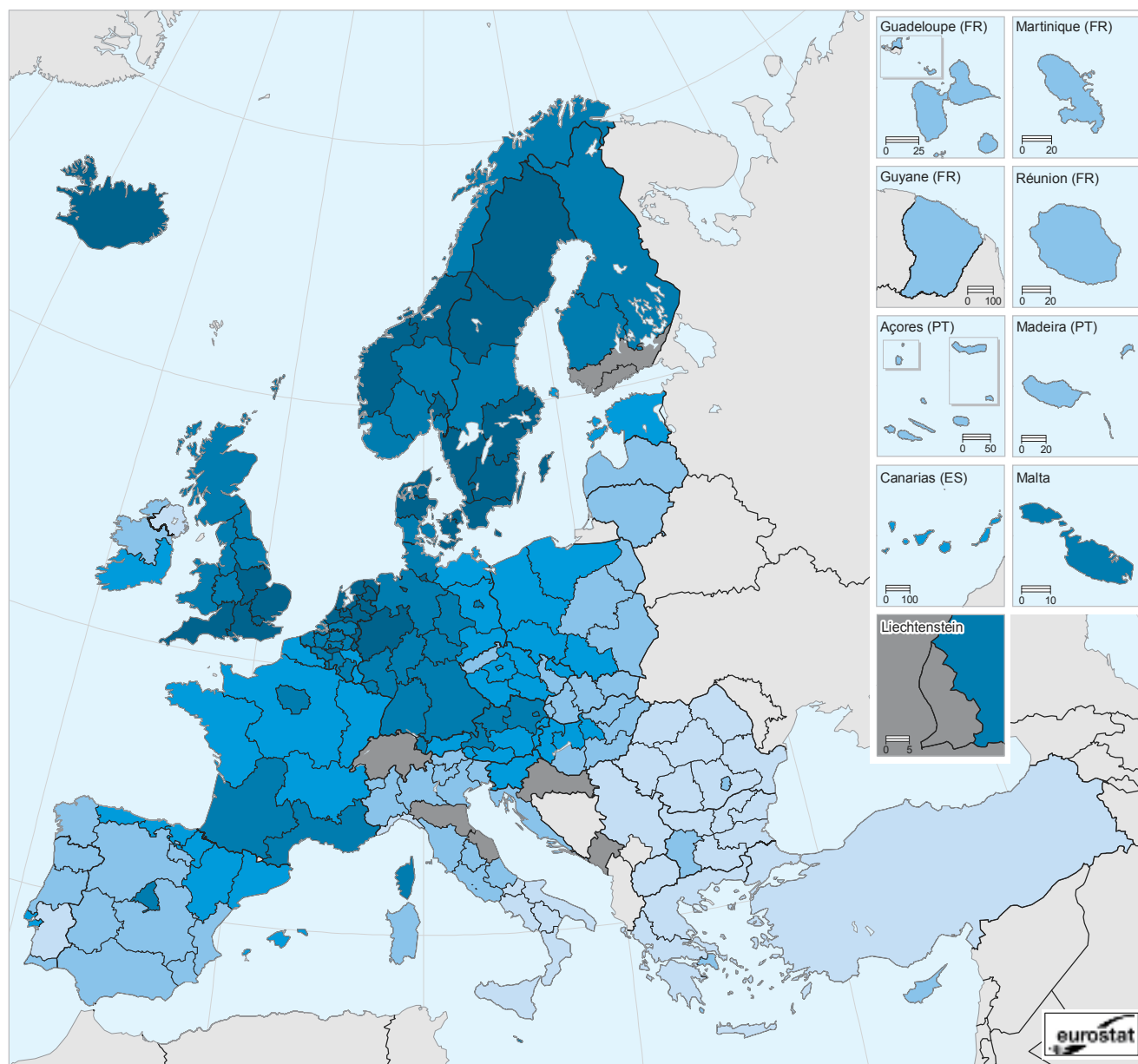
There were 30 NUTS level 2 regions in the EU (Germany, Greece, France, Poland and the United Kingdom, NUTS level 1 regions; Slovenia, national data) that reported a broadband connection rate that was in excess of 80%. Of these, 10 were in the Netherlands (out of a total of 12 NUTS level 2 regions in that country), seven were in Sweden (out of a total of eight in that country), five were in the United Kingdom, four were in Denmark (out of a total of five in that country), three were in Germany and one was in Belgium. The broadband connectivity rate was also in excess of 80% in Iceland (which is a single NUTS level 2 region) and three Norwegian regions (Trøndelag, Oslo og Akershus and Vestlandet).

There were 24 regions in the EU that recorded broadband connection rates of 50% or lower in 2011 — this was considerably less than a year before (in 2010) when the same count had stood at 44 regions. The lowest broadband connectivity rates were almost exclusively recorded in Bulgaria and Romania, as Puglia (Italy, 37%) and Kentriki Ellada (Greece, 34%) were the only regions outside these two countries with a broadband connectivity rate below 40%. Severoiztochen (Bulgaria) and the three Romanian regions of Centru, Sud-Est and Nord-Est each recorded rates that were below 30% — the lowest in the EU. Broadband connection rates in the **accessing and candidate countries** were consistently below the EU-27 average, ranging from 23% in Serbia and 34% in Turkey (no regional data available for either of these countries, data are for 2009 and 2010 respectively) to 58% in Jadranska Hrvatska (Croatia).

Within the EU, 21 of the Member States have multiple (more than one) regions at NUTS level 2 — although for this particular data set there is only national data available for Slovenia (despite it having more than one region). An analysis of the different levels of broadband connectivity across regions within the same Member State shows that Denmark, the Netherlands and Sweden had a relatively homogeneous level of connectivity (using the coefficient of variation as a measure of dispersion). Romania, Bulgaria and Greece reported a wider range in connectivity rates between regions, principally as a result of the capital city region having a much higher level of broadband connectivity than any other region. These patterns of dispersion within the EU Member States were repeated when analysing the frequency of Internet access and the propensity for individuals to use the Internet for ordering goods and services.

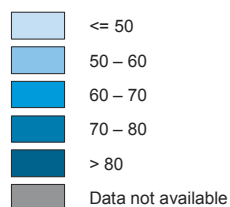


**Map 8.1: Broadband connections in households, by NUTS 2 regions, 2011 <sup>(1)</sup>**  
 (% of households with a broadband connection)

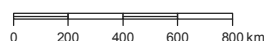


(% of households with a broadband connection)

EU-27 = 67



Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat  
 Cartography: Eurostat — GISCO, 05/2013



<sup>(1)</sup> Former Yugoslav Republic of Macedonia and Turkey, 2010; Serbia, 2009; Northern Ireland (UKN), 2008; Åland (FI20), 2007; Germany, Greece, France, Poland and the United Kingdom, by NUTS 1 regions; Slovenia, Serbia and Turkey, national data.

Source: Eurostat (online data code: [isoc\\_r\\_broad\\_h](#))



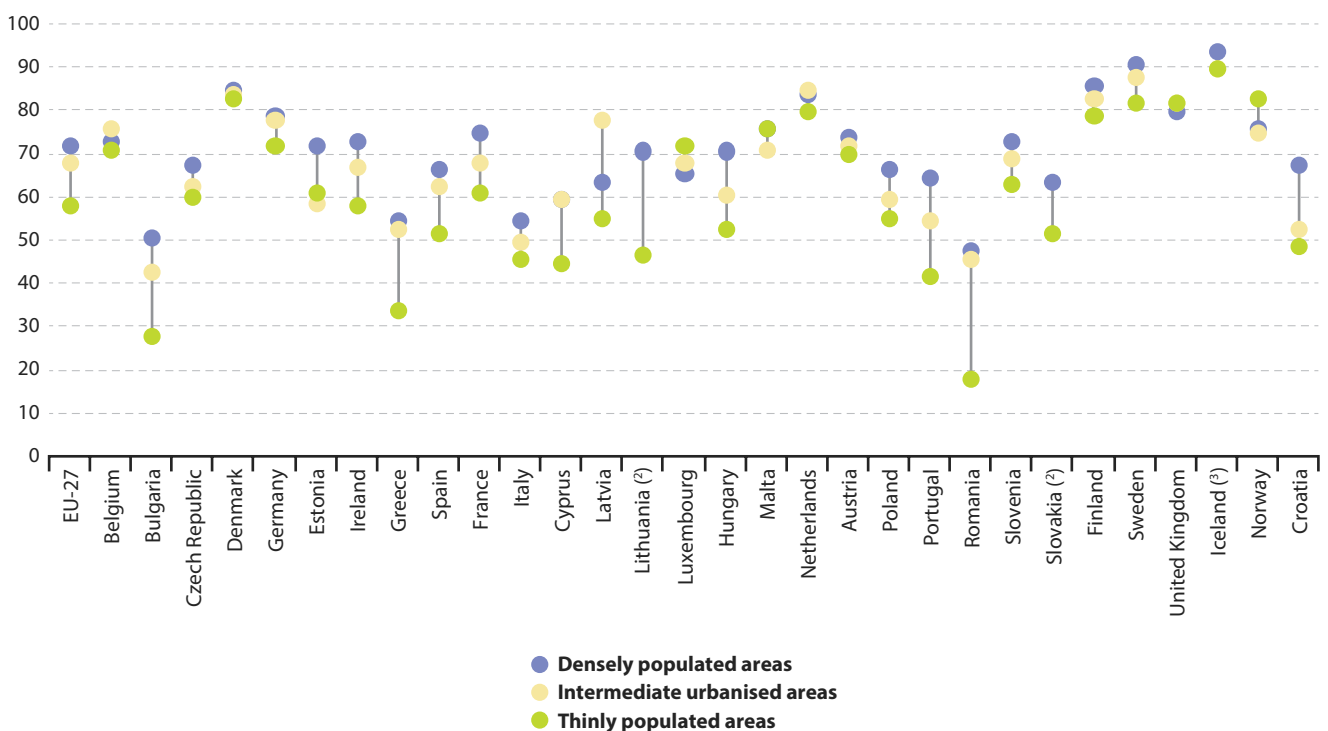
The 10 regions with the highest increases in broadband connectivity rates from 2009 to 2011 (in percentage point terms) each reported that more than half of their households had a broadband connection in 2011. These 10 regions included two each in eastern Germany, the Walloon region of Belgium, and Italy. The two German regions — Brandenburg and Sachsen — recorded the highest percentage point increases, although they continued to register connectivity rates in 2011 that remained well below their national average. By contrast, the Bulgarian region of Yugozapaden (which includes the capital city of Sofia) also recorded relatively fast growth, such that its connection rate was 35% higher than the national average by 2011. Only two regions in the EU recorded a fall in their broadband connectivity among households during the period 2009–11: they were Luxembourg (one region at this level of detail) and Utrecht (the Netherlands) — this was also the case in the two northernmost regions of Norway (Trøndelag and Nord-Norge).

According to the European Commission's 'Digital Agenda for Europe', 95% of EU households had the possibility to access at least a basic broadband connection in 2011, while some

50% of households potentially had access to fast broadband (defined here as being over 30 Mbps). The availability of fast broadband depends upon cable upgrades and is therefore sometimes restricted to urban areas before these services are rolled out to more rural areas. Note that the take-up of these services is generally much lower than the current level for potential connectivity.

Figure 8.1 shows that most countries recorded higher broadband connectivity rates in densely populated areas (as compared with intermediate or thinly populated regions). Within the EU-27 as a whole, some 72% of households in densely populated areas had a broadband connection, compared with 68% in intermediate areas and 58% in thinly populated areas. This pattern was repeated across most of the individual EU Member States, with the exceptions tending to be found in relatively small, densely populated countries (where broadband connections are already extensively available); for example, households in intermediate areas had a higher broadband Internet connection rate than those in densely populated areas in Belgium, Latvia, Luxembourg, the Netherlands and the United Kingdom in 2011.

**Figure 8.1:** Broadband connections in households, by degree of urbanisation, 2011 <sup>(1)</sup>  
(% of households with a broadband connection)



<sup>(1)</sup> Based on NUTS 2006 classification.

<sup>(2)</sup> Intermediate urbanised area, not available.

<sup>(3)</sup> Intermediate urbanised area, 2010.

Source: Eurostat (online data code: isoc\_bde15b\_h)



## Regular use of the Internet

Some 70 % of individuals in the EU-27 used the Internet in 2012 on a regular basis, in other words at least once a week. This proportion rose from 51 % in 2007, although the pace of growth slowed considerably during the period 2010–12. Map 8.2 presents regional data for 2011, when 68 % of EU-27 individuals used the Internet on a regular basis.

There is a relationship between regular use of the Internet and broadband connectivity rates: those regions with a higher proportion of broadband connections tend to have a higher share of regular Internet users — as shown by the similarities between Maps 8.1 and 8.2.

One of the aims of the Digital Agenda for Europe is to increase the regular use of the Internet to 75 % of the total population by 2015. This benchmark ranged, in 2011, from 94 % of individuals in Stockholm (Sweden) — the EU region with the highest broadband connectivity rate — to 33 % in Sud-Vest Oltenia (Romania); in other words, regular use of the Internet was almost three times as high in Stockholm.

Overall, there were 63 NUTS level 2 regions (Germany, Greece, France, Poland and the United Kingdom, NUTS level 1 regions; Slovenia, national data) in the EU in 2011 where more than 75 % of individuals were regular users of the Internet, among which there were 26 where more than 85 % of individuals were regular Internet users. By contrast, there were 41 regions across the EU where 55 % or fewer individuals were regular users of the Internet, among which were 21 regions (in Bulgaria, Greece, Italy, Portugal and Romania) where 45 % or fewer individuals were regular Internet users.

Regular Internet use was consistently high across the EFTA countries: the EFTA region with the lowest share of individuals accessing the Internet at least once a week was Hedmark og Oppland (Norway) where an 89 % share was recorded — this was, nevertheless, 21 percentage points above the EU-27 average. The incidence of regular Internet use in acceding and candidate country regions was consistently below the EU-27 average, ranging from 35 % of individuals in Serbia (2009) and 33 % of individuals in Turkey (data for 2010) — no regional data available for either of these countries — to 58 % in Jadranska Hrvatska (Croatia).

The 10 regions in the EU with the highest growth (in percentage point terms) in their regular use of the Internet from 2009 to 2011 each reported that in excess of 60 % of persons accessed the Internet at least once a week by 2011. The 10 regions with the highest growth included three from Spain (the Ciudad Autónoma de Ceuta, the Ciudad Autónoma de Melilla, and La Rioja), two from Germany and one each from Belgium, Ireland, Austria, Portugal and France. With the exception of the Border, Midland and Western region (Ireland) and the Sachsen region (Germany), the remaining eight regions all reported rates for regular use of the Internet in 2011 that were above their national averages.

## E-commerce by individuals

In 2012, 45 % of individuals in the EU-27 reported that they had made online purchases (within the 12 months prior to the survey date); this figure had grown from 30 % in 2007 and from 40 % in 2010.

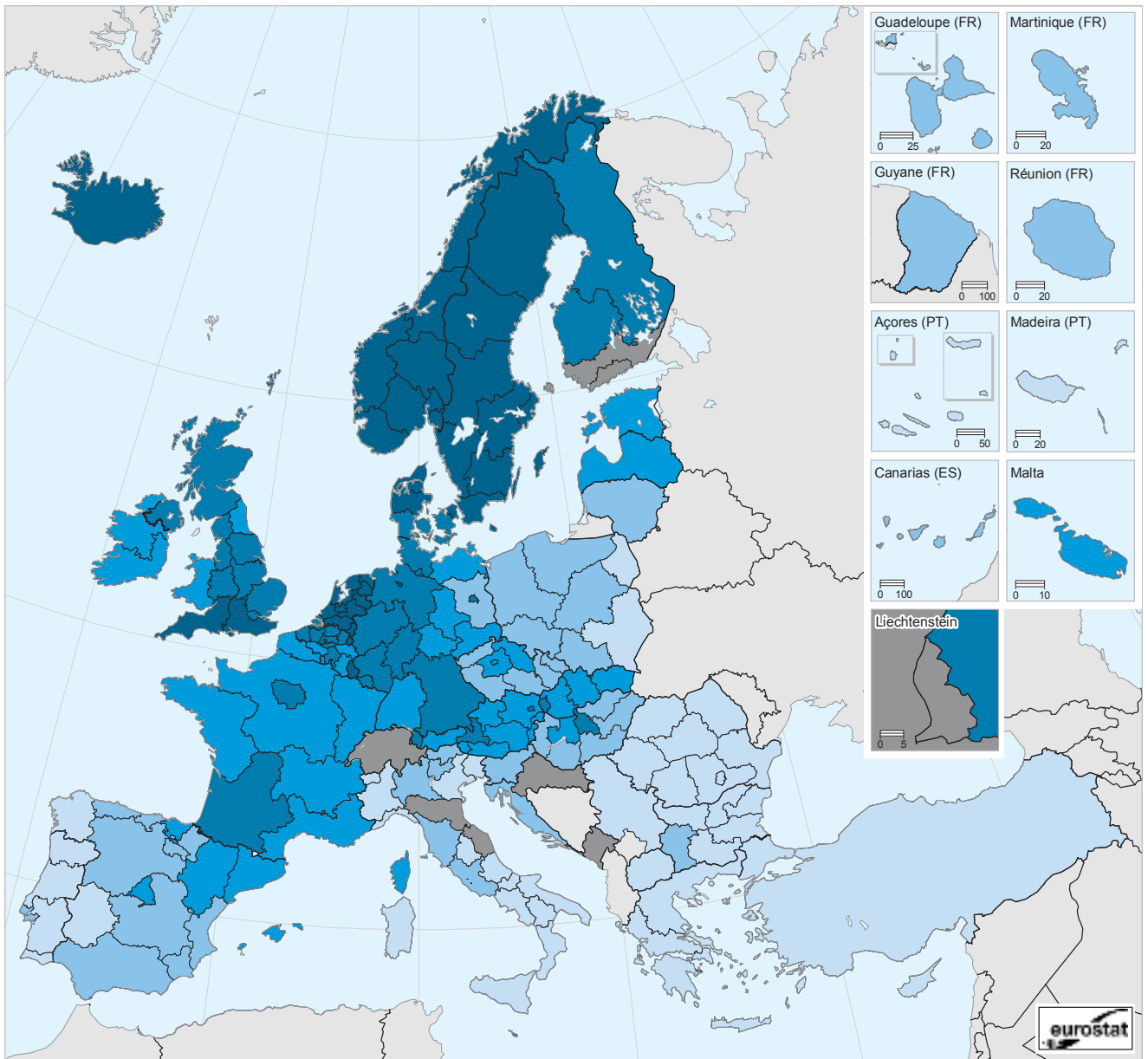
A regional breakdown is only available for 2011 (see Map 8.3). This shows that the highest propensity among individuals to use e-commerce tended to be reported across north-western Europe, while the lowest rates were recorded across southern Member States and many of those [Member States that joined the EU in 2004 or 2007](#). In 2011, the proportion of individuals making online purchases ranged across NUTS level 2 regions (Germany, Greece, France, Poland and the United Kingdom, NUTS level 1 regions; Slovenia, national data) from 82 % in the south-west (of the United Kingdom) to 3 % in the Sud-Est and Vest regions of Romania and the Yuzhen tsentralen region of Bulgaria.

Map 8.3 shows that more than 7 out of every 10 individuals made online purchases in 15 NUTS level 2 regions of the EU in 2011; these included five regions in the United Kingdom (generally in the south, but also Scotland), four regions in the Netherlands, three regions in Sweden, two in Denmark and one in Germany. By contrast, among the 43 NUTS level 2 regions that reported 20 % of individuals or fewer making online purchases in 2011, 14 were in Italy, eight in Romania, six in Bulgaria and in Portugal, three in Greece, two in Spain and in Hungary, as well as one each in Latvia and Lithuania (both these countries equate to a single region at the NUTS level 2).

Among the EFTA countries for which data are available, making online purchases was a relatively widespread activity in 2011 across Norway, with Vestlandet recording the lowest share (66 %). The proportion of people making online purchases in Iceland was just less than one in two (49 %), despite an extremely high broadband connection rate (92 %). People in the acceding and candidate countries were far less likely to have made online purchases in 2011, with only 4 % having done so in the former Yugoslav Republic of Macedonia (2010) and 5 % in Serbia (2009) or Turkey (2010) — no regional data available for the latter two. The highest proportion of people making online purchases among the acceding and candidate country regions was recorded in Jadranska Hrvatska (Croatia, 21 %).

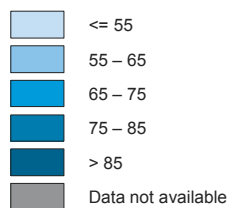
The proportion of people ordering goods or services over the Internet increased (in percentage point terms) during the period 2009–11 by a relatively large amount in many regions in the western-central area of the EU. Among the top 10 increases, there were two regions each from Belgium, Germany, France and the Netherlands, while the other two regions were on the periphery of the EU — namely the Ciudad Autónoma de Ceuta and Bratislavský kraj (the capital city region of Slovakia). Eight of these regions reported that their share of persons ordering goods or services over the Internet

**Map 8.2:** Regular use of the Internet, by NUTS 2 regions, 2011 <sup>(1)</sup>  
 (% of persons who accessed the Internet on average at least once a week)



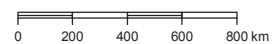
(% of persons who accessed the Internet on average at least once a week)

EU-27 = 68



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Cartography: Eurostat — GISCO, 05/2013

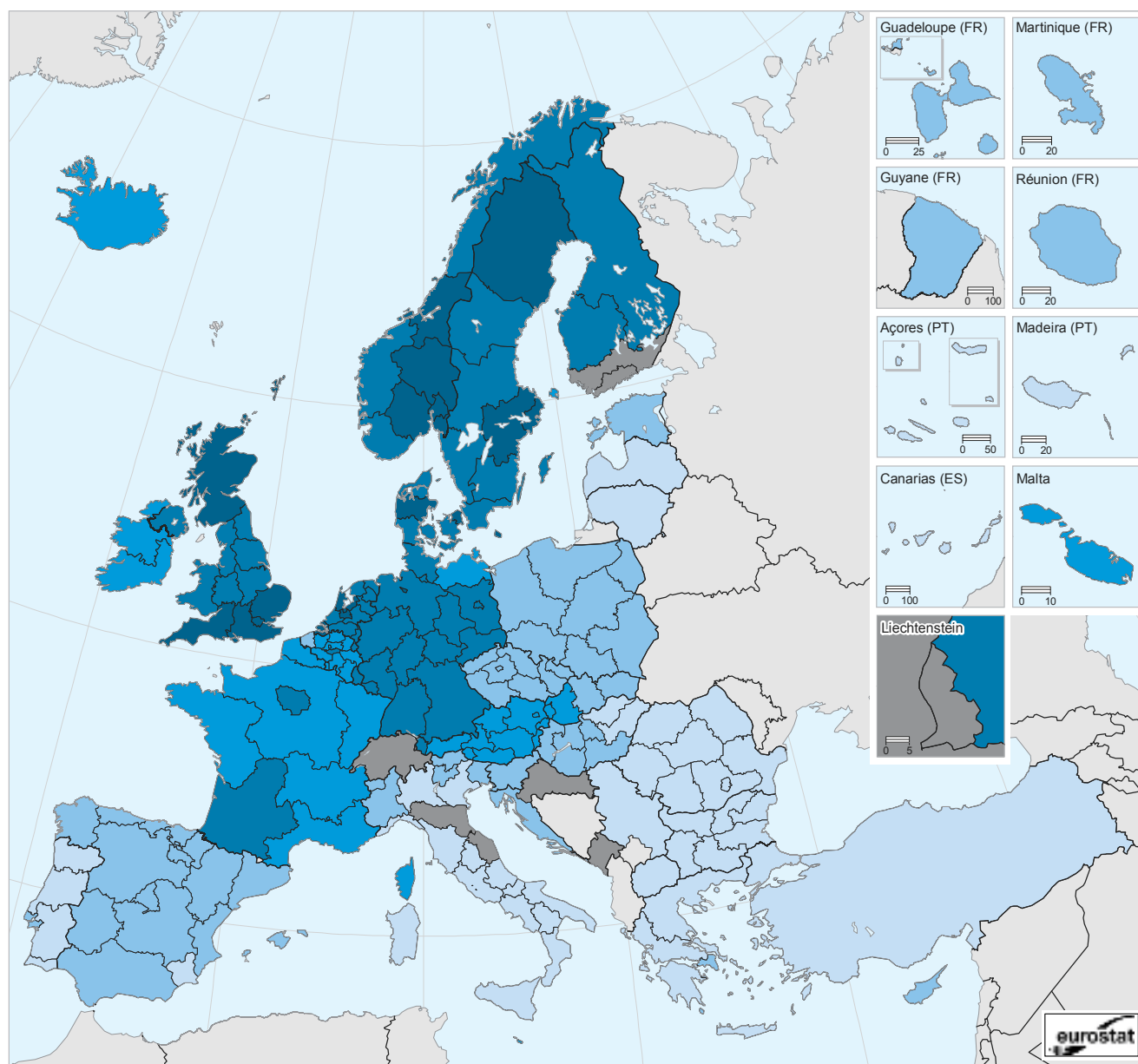


<sup>(1)</sup> Northern Ireland (UKN), former Yugoslav Republic of Macedonia and Turkey, 2010; Serbia, 2009; Germany, Greece, France, Poland and the United Kingdom, by NUTS 1 regions; Slovenia, Serbia and Turkey, national level.

Source: Eurostat (online data code: [isoc\\_r\\_iuse](#))

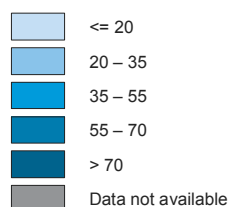


**Map 8.3:** Online purchases, by NUTS 2 regions, 2011 <sup>(1)</sup>  
 (% of persons who ordered goods or services over the Internet for private use)



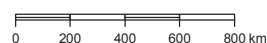
(% of persons who ordered goods or services over the Internet for private use)

EU-27 = 45



Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat

Cartography: Eurostat — GISCO, 05/2013



<sup>(1)</sup> Nisia Aigaiou, Kriti (EL4), Ciudad Autónoma de Melilla (ES64), Northern Ireland (UKN), former Yugoslav Republic of Macedonia and Turkey, 2010; Serbia, 2009; Åland (FI20), 2007; Germany, Greece, France, Poland and the United Kingdom, by NUTS 1 regions; Slovenia, Serbia and Turkey, national level.

Source: Eurostat (online data code: [isoc\\_r\\_blt12\\_i](#))

in 2011 was at least as high as the respective national average. Three regions had a very high relative propensity for individuals to engage in e-commerce: the proportion of people ordering goods or services over the Internet in the Ciudad

Autónoma de Ceuta was 51.9% higher than the Spanish average, while the corresponding rates were 25.6% higher and 21.6% higher for the Province/Provincie Vlaams-Brabant (Belgium) and Bratislavský kraj.

**Table 8.1:** Top 10 regions in terms of increasing use of the Internet, by NUTS 2 regions, 2009–11 <sup>(1)</sup>

Top 10 regions	2009	2010	2011	Average rate of change, 2009–11 (% per annum)	Value for 2011 compared with national average (national average = 100)
<b>Broadband connections in households</b> (% of households with a broadband connection)					
Brandenburg (DE4)	40	64	66	28.5	84.6
Sachsen (DED)	47	66	69	21.2	88.5
Prov. Hainaut (BE32)	53	63	74	18.2	100.0
Prov. Namur (BE35)	57	63	78	17.0	105.4
Sardegna (ITG2)	36	54	56	24.7	107.7
Vorarlberg (AT34)	59	65	79	15.7	109.7
Ciudad Autónoma de Ceuta (ES63)	46	61	65	18.9	104.8
East Midlands (UKF)	64	:	83	13.9	103.8
Yugozapaden (BG41)	36	37	54	22.5	135.0
Valle d'Aosta/Vallée d'Aoste (ITC2)	34	48	52	23.7	100.0
<b>Regular use of the Internet</b> (% of persons who accessed the Internet on average at least once a week)					
Ciudad Autónoma de Ceuta (ES63)	45	55	71	25.6	114.5
Prov. Namur (BE35)	63	72	81	13.4	103.8
Ciudad Autónoma de Melilla (ES64)	46	51	64	18.0	103.2
Border, Midland and Western (IE01)	49	56	66	16.1	93.0
La Rioja (ES23)	46	56	62	16.1	100.0
Bremen (DE5)	78	77	92	8.6	119.5
Vorarlberg (AT34)	68	72	82	9.8	107.9
Lisboa (PT17)	50	57	64	13.1	125.5
Sachsen (DED)	56	66	69	11.0	89.6
Sud-Ouest (FR6)	67	68	80	9.3	108.1
<b>Online purchases</b> (% of persons who ordered goods or services over the Internet for private use)					
Ciudad Autónoma de Ceuta (ES63)	20	18	41	43.2	151.9
Sud-Ouest (FR6)	42	52	60	19.5	113.2
Prov. Namur (BE35)	32	43	49	23.7	114.0
Sachsen (DED)	41	51	57	17.9	89.1
Ouest (FR5)	37	44	53	19.7	100.0
Bratislavský kraj (SK01)	29	41	45	24.6	121.6
Thüringen (DEG)	52	61	67	13.5	104.7
Prov. Vlaams-Brabant (BE24)	40	47	54	16.2	125.6
Friesland (NL12)	50	60	64	13.1	92.8
Drenthe (NL13)	57	64	70	10.8	101.4

<sup>(1)</sup> Based on only those regions with data available for 2009–11; Germany, Greece, France, Poland and the United Kingdom, by NUTS 1 regions; Slovenia, national level.

Source: Eurostat (online data codes: [isoc\\_r\\_broad\\_h](#), [isoc\\_r\\_iuse](#) and [isoc\\_r\\_blt12\\_i](#))





## Data sources and availability Context

EU statistics on the use of ICT are based on Regulation (EC) No 808/2004 of the European Parliament and of the Council concerning [Community statistics on the information society](#). The regulation concerns statistics on the use of ICT in enterprises and statistics on ICT use in households and by individuals — only the latter are presented in this chapter. In 2011 the European Commission enacted an implementing Regulation (EU) No 937/2011 concerning [statistics on the information society](#), which provides a legal basis for the collection of data relating to enterprises, individuals and households as of reference year 2012.

Eurostat's ICT surveys aim to provide the timely provision of statistics on individuals and households concerning the use of ICT. A large proportion of Eurostat's ICT statistics are used in this context for the benchmarking exercise linked to Europe's digital agenda.

Regional ICT data for a limited list of indicators have been available at the NUTS level 1 since 2006 as a voluntary contribution by the EU Member States and since 2008 on a mandatory basis; some EU Member States provide regional data at NUTS level 2 on a voluntary basis. For the household/individual survey, questions on access to ICT are addressed to households, while questions on the use of ICT are answered by individuals within the household. As well as a core part, the model questionnaire includes a special focus which is changed each year. The scope of the household/individual survey comprises individuals aged 16–74 and households with at least one member within this age range. The reference period is the first 3 months of the calendar year.

The term broadband connection refers to the speed of data transfer for uploading and downloading data. Broadband requires a data transfer speed of at least 144 kbit/s. The technologies most widely used for broadband access to the Internet include digital subscriber lines (DSL) and cable modems.

Internet users are persons who have used the Internet within the 3 months prior to the survey being conducted. Regular Internet users have used the Internet at least once a week within the 3-month reference period.

E-commerce via the Internet is defined as placing orders for goods or services via the Internet. Purchases of financial investments (for example, stocks and shares), confirmed reservations for accommodation and travel, participation in lotteries and betting and obtaining payable information services from the Internet or purchases via online auctions are included in the definition. Orders placed by manually typed e-mails are not counted. Delivery or payment by electronic means is not a requirement for an e-commerce transaction.

During the course of recent decades, ICTs have penetrated all areas of economic and social life; they are credited with transforming societies in a profound and unprecedented way, in part through their effect on raising productivity. With access to the Internet, it is very easy to obtain information about almost any topic, as search engines provide rapid and easy access to websites and information sources. Many other activities, such as communicating, consuming media and buying or selling goods and services, can be performed online through a growing variety of devices. For example, it is possible to maintain contact with family members or friends via social networking sites, share holiday pictures on the web or have a video call with a friend via the Internet, while a growing share of retail sales are accounted for by online transactions. ICTs also ease working from home or other remote locations, delivering greater flexibility in the working environment. These developments have created new dimensions of economic, social or political participation for individuals and groups and the ubiquitous presence of ICTs has the potential to create completely new ways of participating in the economy and society.

The dissemination of ICTs across the EU is thought to be a major lever for improving both productivity levels and the competitiveness of regions. EU Structural Funds have been used to help support the uptake of ICTs by businesses and households and promote development through balanced support to the supply of and demand for ICT products in public and private services. According to the European Commission's Directorate-General for Regional and Urban Policy, regional funds allocated to ICTs during the period 2007–13 were valued at EUR 15 billion or 4.4% of the total budget for cohesion policy, with investment priorities shifting from infrastructure to support for the development of content.

The participation of individuals and businesses in the information society depends on access to ICTs, for example the ownership of an electronic device (such as a smart phone, tablet or computer), a fast connection to the Internet and knowledge of the relevant skills. The digital divide distinguishes between those who have access to the Internet and are able to make use of services offered on the web and those who are excluded. The divide can reflect criteria that describe the differences in ICT participation according to sex, age, education, income, social group or geographic location. For example, regular use of the Internet, in particular online purchases, is often found to be less common in rural/remote regions. The EU has acknowledged the importance of bridging the digital divide to give everyone equal access to ICTs and to enable them to participate in the information society. In



2010 the European Commission adopted a communication on 'A Digital Agenda for Europe' (COM(2010) 245 final/2), a strategy designed to provide a flourishing digital economy by 2020. This digital agenda is one of seven flagship initiatives under the [Europe 2020](#) strategy for smart, sustainable and inclusive growth. The agenda focuses on seven priority areas for action: creating a digital single market; greater interoperability; boosting Internet trust and security; providing much faster Internet access; encouraging investment in research and development; enhancing digital literacy skills and inclusion; and applying ICTs to address challenges facing society like climate change and the ageing population. Examples of expected benefits include easier electronic payments and invoicing, rapid deployment of telemedicine and energy efficient lighting.

The digital agenda emphasises the quality of services insofar as it has set a target for all households in the EU to have broadband subscriptions that are faster than 30 Mbps by 2020 and another target for 50% of households to have broadband subscriptions with speeds above 100 Mbps by the same year. These two targets form part of a benchmarking initiative to measure progress being made in relation to the development of the European information society and the level of achievement of the policy objectives set out in the digital agenda. The digital agenda [scoreboard](#) has 13 specific targets for the years 2013–20.

The digital agenda also puts emphasis on online shopping, with a focus on achieving a single European digital market. Policy measures aim to lower national barriers for online markets by opening access to content, such as buying and downloading digital media content, simplifying cross-border

transactions and payments, and building trust in cross-border e-commerce.

The [connecting Europe facility \(CEF\)](#) has a proposed budget of up to EUR 50 billion for the period 2014–20; it is designed to promote growth, jobs and competitiveness through infrastructure investment to help build high-performing, sustainable and interrelated networks across the EU in the fields of transport, energy and communications. The European Commission has proposed that EUR 9.2 billion of the CEF should be used to stimulate investment in fast and very fast broadband networks and pan-European digital services. In December 2012, a joint vote by the transport and industry committees of the European Parliament approved rules on how the CEF would fund infrastructure projects; the CEF proposals are expected to be adopted before the end of 2013.

More specifically within the context of the information society, CEF Digital is a proposal for developing broadband networks and digital service infrastructures. Examples include promoting the deployment of fast and ultrafast broadband networks and establishing cross-border access to interoperable, digital public services in the fields of public administration, culture, education, research and health, such as e-procurement, e-health or e-justice. These changes could result in a doctor who is treating an individual who falls sick while travelling in another Member-State being able to retrieve a patient's medical records or alternatively a business in one Member State being able to send a procurement bid to an administration in another Member State through a system that overcomes national fragmentation and language barriers that may currently deter cross-border cooperation or competition.