



# Human capital: Digital Inclusion and Skills

**The Digital Economy and Society Index (DESI)** is a composite index that summarises relevant indicators on Europe's digital performance and tracks the evolution of EU Member States in digital competitiveness.

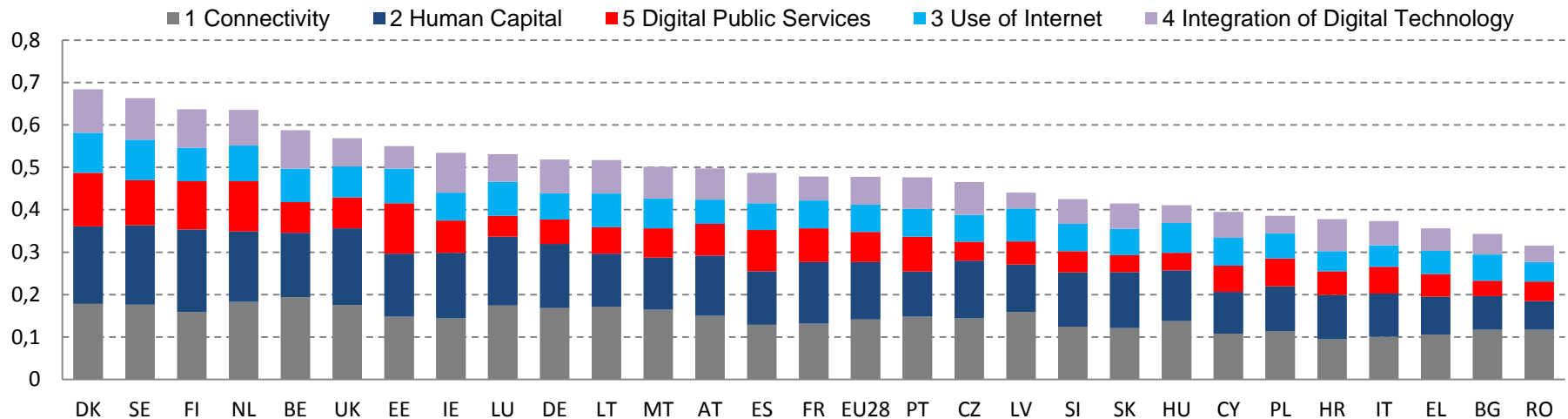
Denmark, Sweden, the Netherlands and Belgium have the most advanced digital economies in the EU followed by the UK and Estonia.

Romania, Bulgaria, Greece and Italy are at the bottom of the list.

### The five dimensions of the DESI

1 Connectivity	Fixed Broadband, Mobile Broadband, Broadband speed, and Affordability
2 Human Capital	Basic Skills and Usage, Advanced skills and Development
3 Use of Internet	Content, Communication and Transactions on line
4 Integration of Digital Technology	Business digitization and eCommerce (40%)
5 Digital Public Services	eGovernment and eHealth (33%)

**Digital Economy and Society Index (DESI), June 2015**



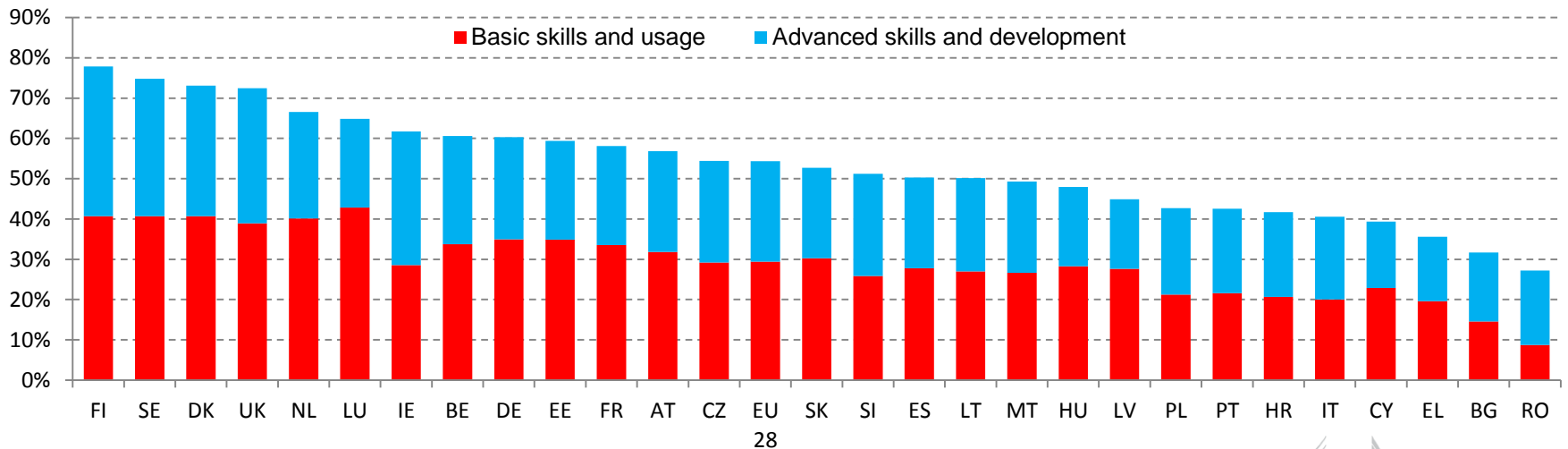
Source: European Commission, Digital Agenda Scoreboard

**For the Human Capital dimension, the highest score were achieved by Finland, Sweden, Denmark and the United Kingdom. The weakest performance in this dimension were recorded for Romania, Bulgaria and Greece.**

The Human Capital dimension of the DESI has two sub-dimensions covering 'basic skills and usage' and 'advanced skills and development'. The basic skills and usage sub-dimension includes indicators on internet use by individuals and digital skills - individuals with at least basic skills in the Digital Skills Indicator. The second sub-dimension includes indicators on ICT specialist employment and graduates in STEM (Science, Technology Engineering and Mathematics). LU, FI, SE and DK score highest for basic skills and usage, while FI, SE, the UK and IE score best for advanced skills and development. BU, RO and EL score consistently at the bottom of the rankings for both sub-dimensions.

	<b>EU 28</b>
<b>2a1 Internet Users</b> % individuals (aged 16-74)	<b>75%</b> (2014)
<b>2a2 Basic Digital Skills</b> % individuals (aged 16-74)	<b>59%</b> (2014)
<b>2b1 ICT Specialists</b> % employed individuals	<b>2.8%</b> (2012)
<b>2b2 STEM Graduates</b> Graduates in STEM per 1000 individuals (aged 20 to 29)	<b>17</b> (2012)

**Digital Economy and Society Index (DESI), Component 2 - Human Capital, by aggregate scores, 2015**

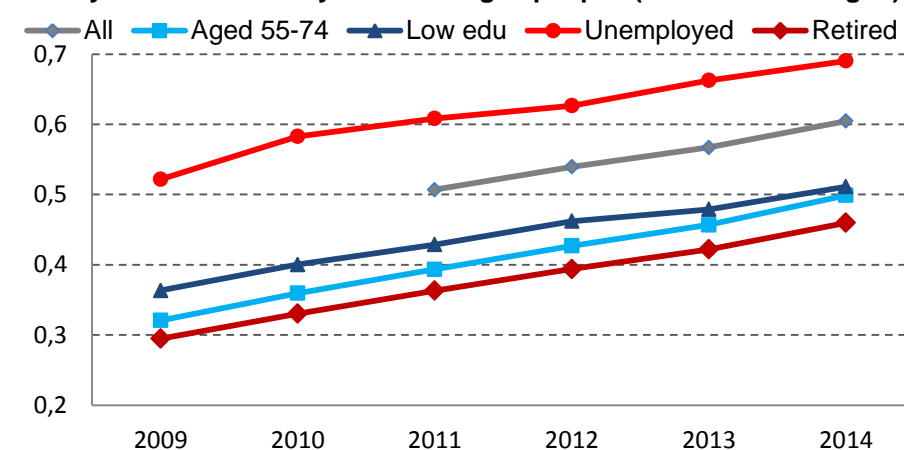


Source: European Commission, Digital Agenda Scoreboard

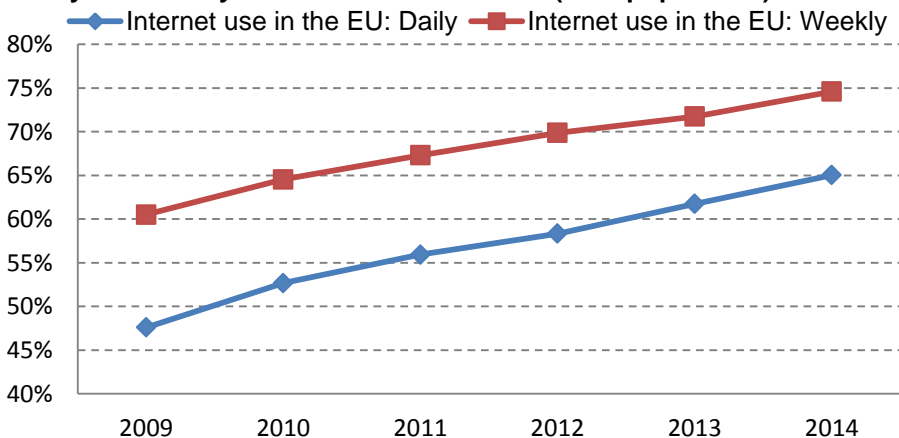
**75%** of EU population uses the internet weekly and **60%** of disadvantaged do so. Most of EU population (**65%**) uses the internet every day.

The number of internet users in the population continues to increase, with 75% of the EU population reporting that they used the internet at least weekly in 2014. For most people, use of the internet is a daily activity, with 65% of EU citizens reporting using it daily in 2014. Use by disadvantaged people also continues to rise; with 60% reporting using the internet at least weekly in 2014. As such, the Digital Agenda targets on internet use have been met before their target date of 2015. If past trends persist, it can be expected that by 2024 90% of the EU population will be regular internet users.

Weekly use of internet by disadvantaged people (% of disadvantaged)



Daily and weekly use of internet in the EU (% of population)



### Our Target

Weekly use of the internet at 75% by 2015 **75% in 2014**

Weekly use by disadvantaged people at 60% by 2015

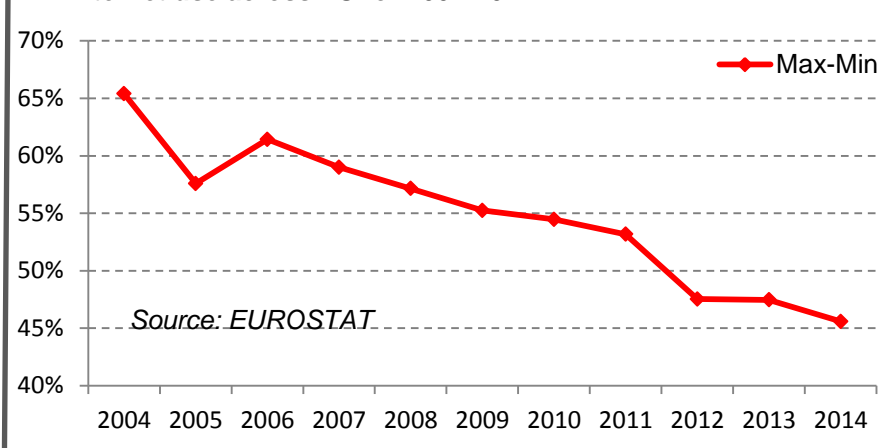
**60% in 2014**



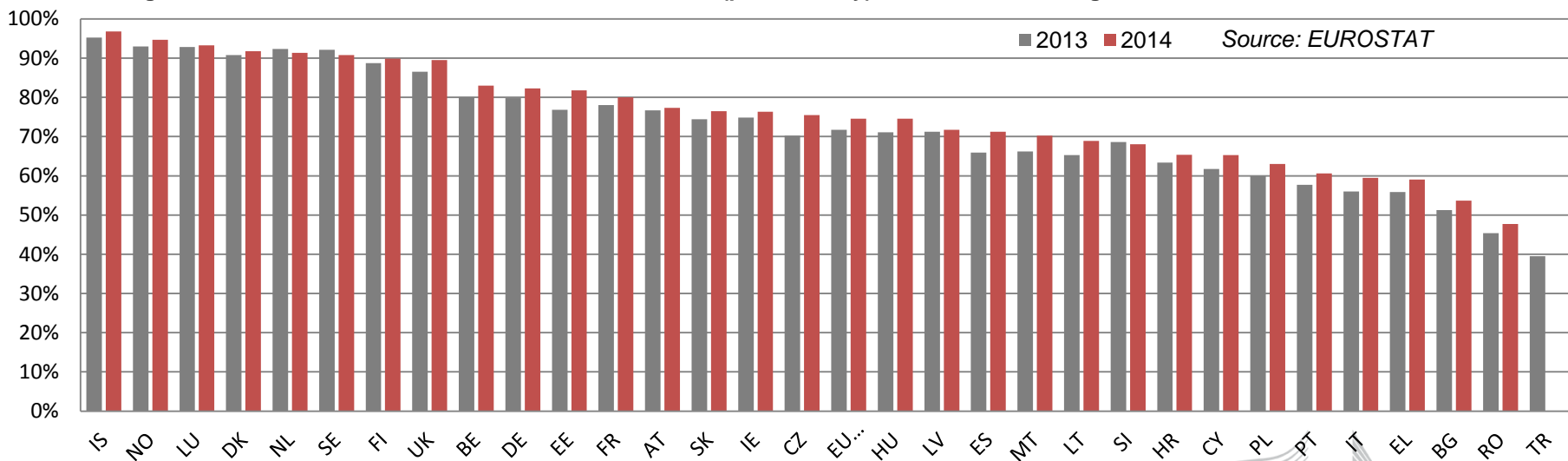
# Rates of **weekly internet use** across the EU Member States remain quite dispersed, but there has been significant catch-up over time.

Across Europe rates of weekly internet use remain dispersed and the rankings of countries with the highest and lowest rates have changed very little over time. The highest rates of weekly internet use are found in the Nordic countries, Luxemburg, the Netherlands and the United Kingdom, where rates are around 90% or more. At the other end of the scale, countries with the lowest rates of weekly internet use (RO, BG) in the EU have around half of their populations not using the internet on a weekly basis. Nevertheless, there has also been significant catch-up with, generally speaking larger increase in a rates of weekly use of the internet in countries with the most catching up to do.

Difference between the Maximum and Minimum rates of weekly internet use across EU for 2004-2014



Regular Internet use in the EU and candidate countries (plus Norway): % individuals using the internet at least once a week



The number of non-internet users continues its gradual downward trend and big improvements have been made in some countries with large rates of non-users. However **18%** of the EU population has still **never used the internet**.

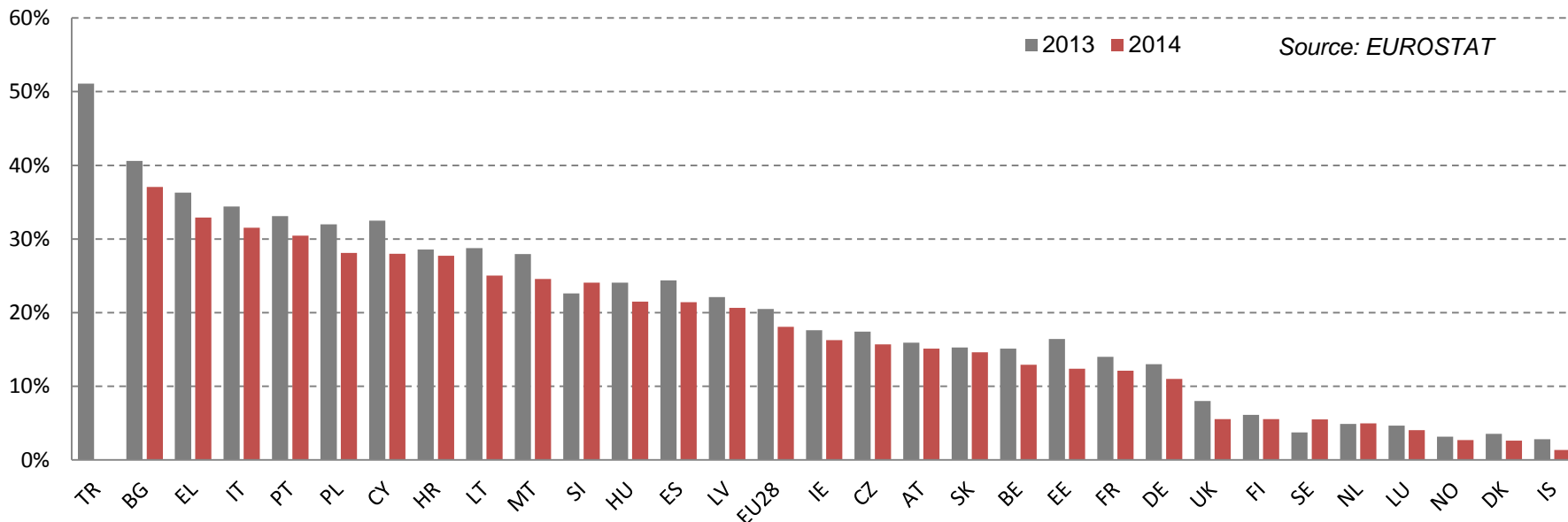
The rate of non-internet users in the EU fell marginally in 2014, to 18% from 20% a year earlier. Nearly all Member States made some improvement in reducing rates of non-users and most of those that did not (FI, 6%; NL, 5%; SE, 6%; SI, 24%; SK, 15%) are those with relative low rates of non-users. The biggest improvements were made in Estonia (-5 pp.) and in Bulgaria, Poland, Cyprus and Lithuania (-4 pp. each). However, a number of countries still need to do more to reduce their relatively high rates of non-internet users.

### Our Target

Halve the number of non-users from 30% (in 2009) to 15% by 2015 – **18% in 2014**



Individuals who never used internet



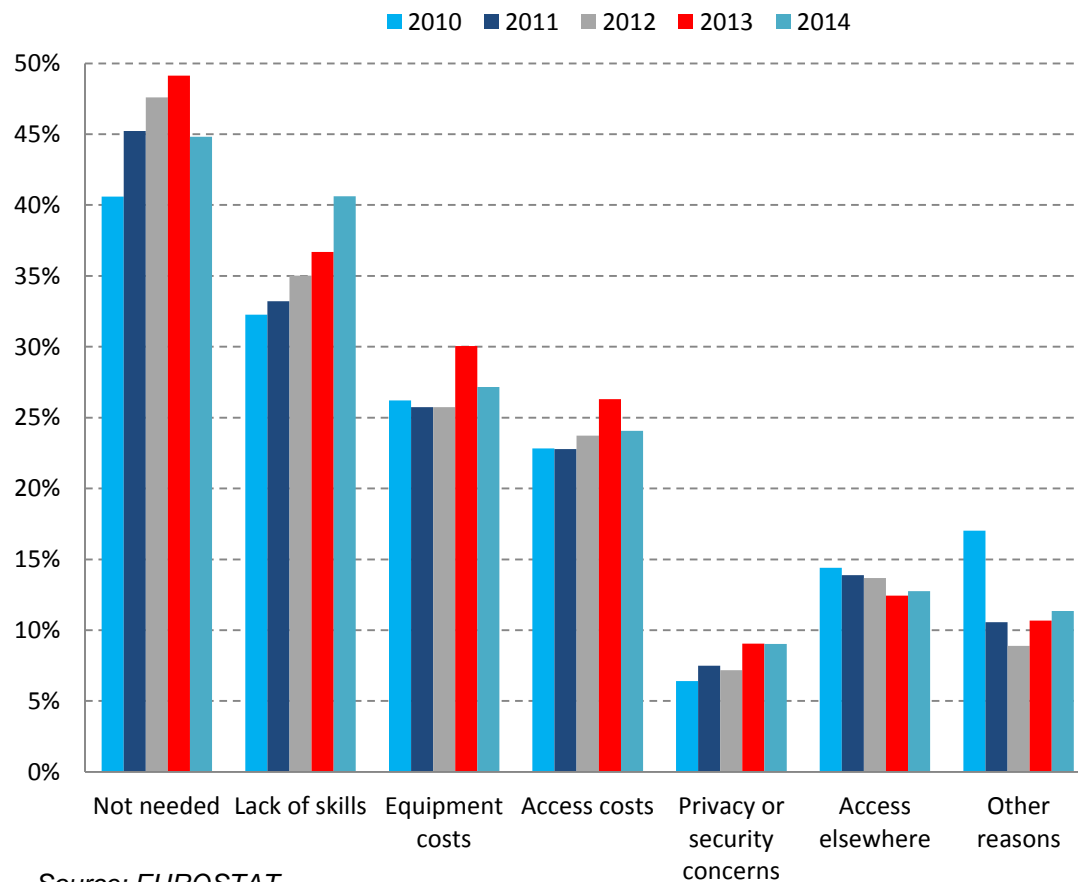
Source: EUROSTAT

# The biggest **barriers to internet access at home** in the EU are lack of need, insufficient skills and cost barriers. In particular, lack of skills has increased in importance as a reason.

The three most important reasons for households not having internet access are that it is not needed (45%), due to a lack of skills (41%) and because the equipment (27%) and access (24%) costs are too high. In particular, lack of skills has gained substantially in importance over the last year.

Looking at different household types, cost factors are substantially more important reasons for not having internet access at home amongst households with children and those on low incomes.

Barriers to internet access at home in the EU28 (% households without internet)



Source: EUROSTAT

In 2014 **40%** of the EU population had an insufficient level of digital skills. **22%** has none at all, as they did not use the internet. In 2012 the figures were 45% and 27%, respectively.

According to the composite index of **digital skills\***, based on the IPTS digital competence framework\*\*, 22% of the EU population has no digital skills (2014) i.e. are not using the internet. This figure ranges from 5% in Luxemburg to 45% in Bulgaria and 46% in Romania. In eight countries (PT, PL, HR, CY, IT, EL, BG and RO) 30% or more of the population have no digital skills. In Italy, with its large population, this equates to almost 18 million people without digital skills.

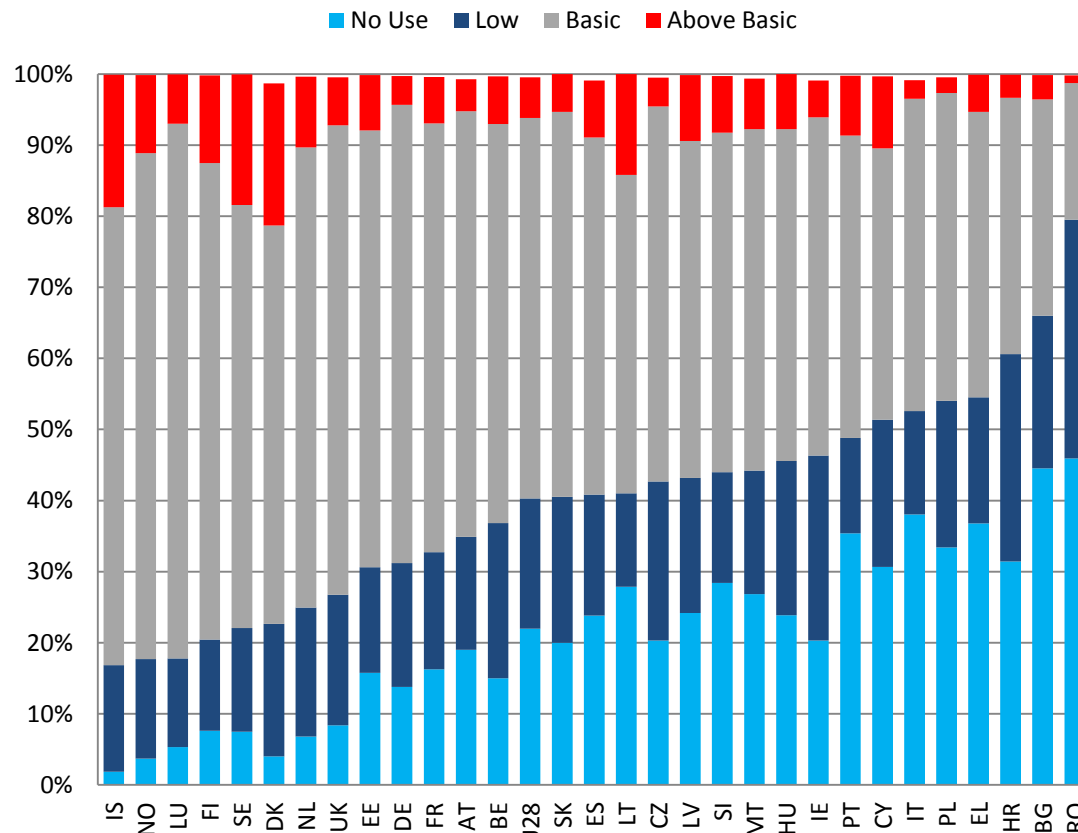
Considering that to function effectively in the digital society an individual needs more than low level skills (e.g. only being able to send emails), 40% of the EU population can be considered as insufficiently digitally skilled (having either low digital skills or not using the internet).\*\*\* Seventeen Member States have rates higher than this. In Romania (80%) most of the population does not have the digital skills they need to function effectively in the digital world.

\* [http://ec.europa.eu/newsroom/dae/document.cfm?action=display&doc\\_id=9979](http://ec.europa.eu/newsroom/dae/document.cfm?action=display&doc_id=9979)

\*\* Ferrari, A. (2013). DIGCOMP: A Framework for Developing and Understanding Digital Competence in Europe. JRC Scientific and Policy Reports.

\*\*\* To be classified as Low skilled an individual has to have carried out activities from only one of the four Digital Competence domains included in the index (information, communication, content-creation and problem-solving). To have basic skills, an individual has to have basic in at least one domain, but no none. To be classified Above basic the individual has to score above basic in each of the four domains.

**Digital skills of the EU population**  
(% individuals with Above Basic, Basic and Low digital skills and no internet use)



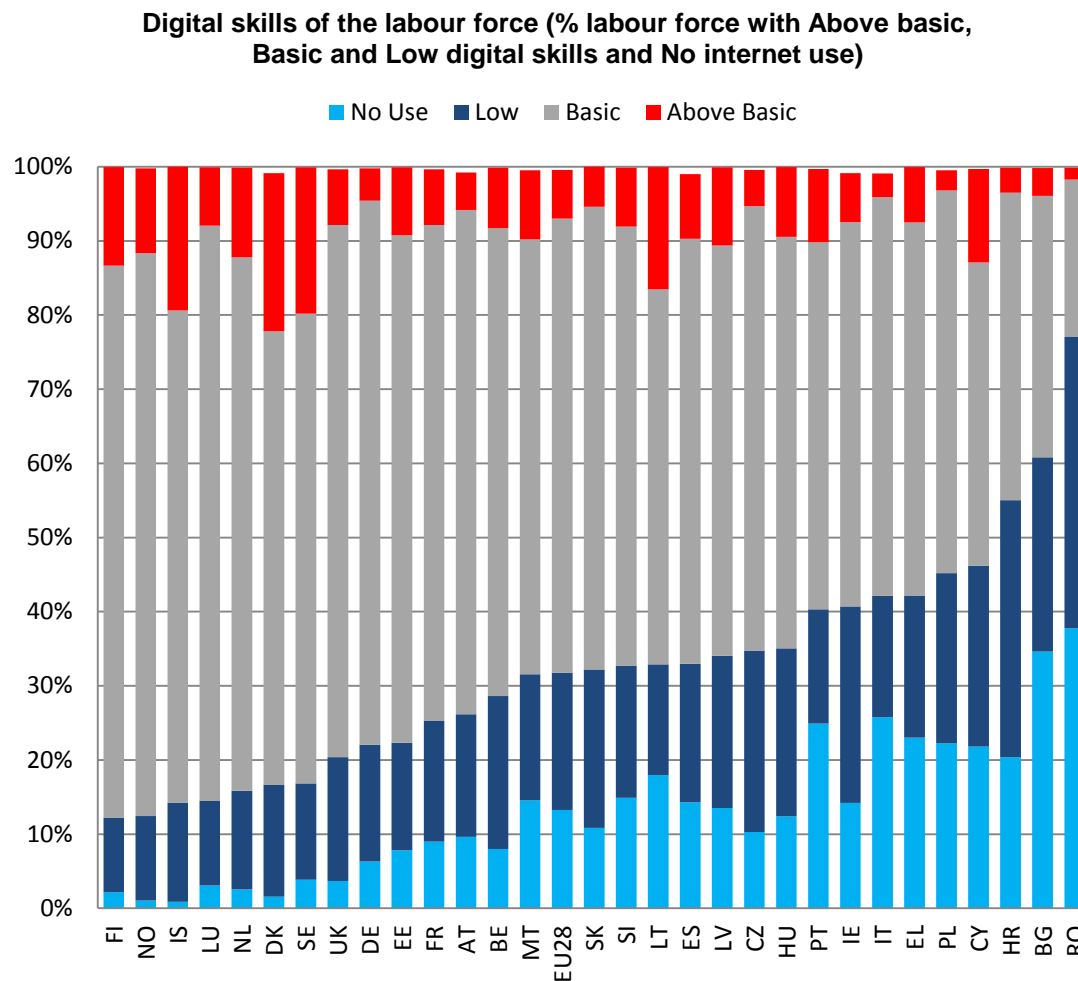
Source: Commission services based on Eurostat data



In 2014 **32%** of the EU labour force had an insufficient level of digital skills. **13%** had no digital skills at all, as they did not use the internet. In 2012 the figures were 39% and 14%, respectively.

Rates of digital skills amongst the labour force are on average higher than for the average population in the EU. Only 13% of the EU labour force has no digital skills. However, in some countries rates are still relatively high. In eight countries (HR, PL, PT, IT, CY, EL, BG and RO) rates are at or above 20% of the labour force. In Romania and Bulgaria more than a third of the labour force has no digital skills.

If we also add to this the percentage of the labour force who have only a low level of skill, we get a figure of around a third of the EU labour force (32%) that can be considered to be insufficiently digitally skilled. In eighteen Member States (SK, SI, LT, ES, LV, CZ, HU, PT, IE, IT, EL, PL, CY, HR, BG and RO) the percentage is higher. In Bulgaria (61%) and Romania (77%) it is most of the labour force.



**On average ICT specialist employment has grown over 4% a year over the last decade. By contrast, total employment has been falling since the onset of the crisis in 2008.**

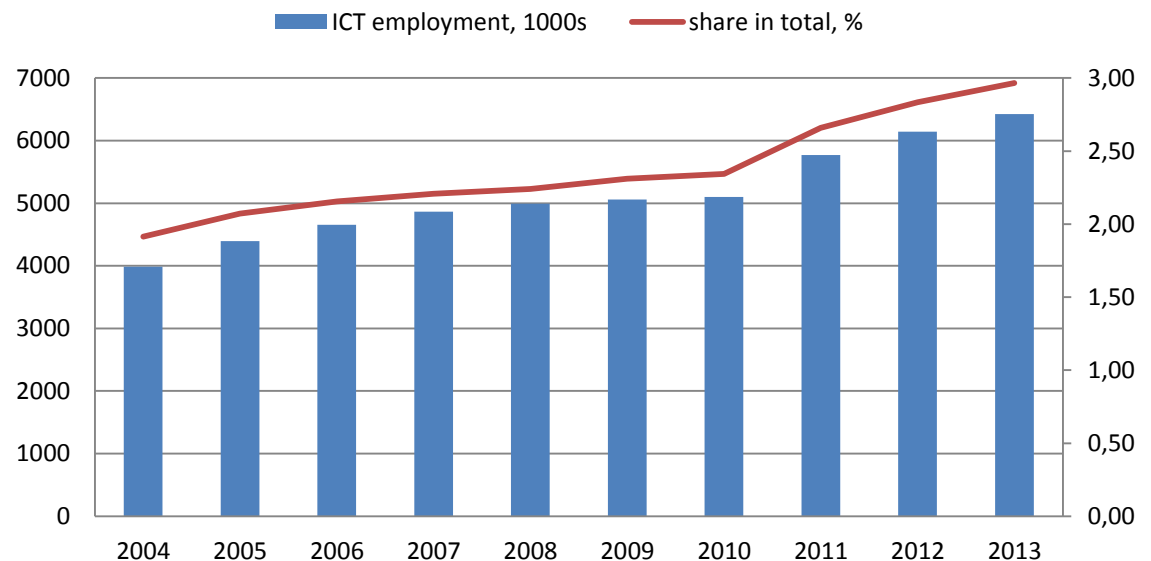
Over the period 2004-2013 employment of ICT specialists (Broad definition)\* in the EU-28 grew significantly by 2.4 million; from around 4 million in 2004 to 6.4 million in 2013. This resulted in an increase in the share of ICT employment in total employment from 1.9% to 3% over this period. On average, ICT employment growth was more than 4% p.a. over this (allowing for the break in the series in 2010-2011). By contrast, the average growth rate of total employment has been 0.4% p.a. over this period and overall employment has been continuously falling since the onset of the crisis in 2008.

\* ISCO codes 25 and 35 plus ICT graduates in certain adjacent ISCO codes.

All EU countries have seen an important increase in ICT specialist employment over the past decade. The largest employment gains were made in the big Member States DE (524,000), the UK (451,000), FR (190,000), PL (189,000) and ES (186,000). However, growth in ICT specialist employment has been very substantial in many smaller countries.

The Member States with the highest rates of ICT specialist employment in total employment are FI (5%), SE (4.7%), DK and the UK (4.1%). The biggest employment gains have been made outside the ICT sector and in the ICT services sector.

**Employment of ICT specialists in the EU in absolute terms and as a share of total employment (broad definition), 2004-2013**



Source: Eurostat

# The EU has a growing deficit of ICT professional skills, forecast to reach 825,000 by 2020.

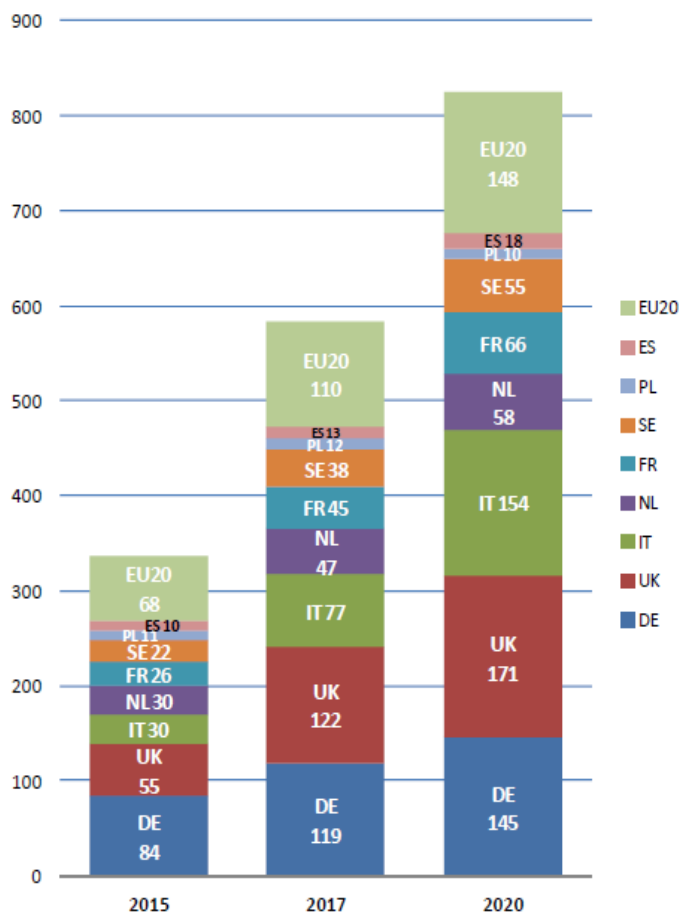
Despite the strong positive evolution in the employment of ICT professionals in the EU over the past decade, the **employment potential of ICT is underexploited**. Evidence shows that there is a growing gap emerging between the demand and supply of ICT specialists in Europe. This gap has been projected could reach 825 000 by 2020 if not addressed.\*

It is the purpose of the Commission's **Grand Coalition** for Digital Jobs initiative to address this issue of lacking ICT professional skills.

Currently the largest ICT professional skills gap is to be found in **Germany**. However, latest forecasts suggest that over the period up to 2020 the ICT professionals skills gaps will be severely aggravated in the **UK** and **Italy** in particular; largely due to the insufficient production of ICT graduates to keep up with strongly increasing demand for ICT professionals in these countries.

\* Tobias Hüsing, Werner B. Korte and Eriona Dashja: E-skills and e-leadership skills 2020. Trends and forecasts for the European ICT professional and digital leadership labour market (Working Paper), Bonn, May 2015

**E-Skills Vacancies Estimate – Main forecast scenario:  
Distribution of vacancies per country ('000s)**



Source: empirica model forecast.