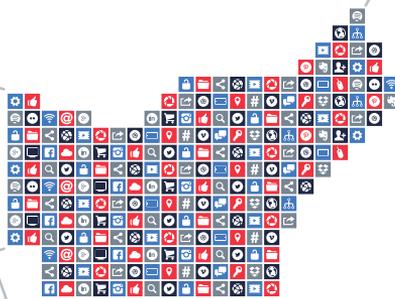


# Digital Transformation of Small and Medium Enterprises in the **SLOVENIA**



DELab UW Country Report

April 2016

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# Acronyms

- B2B – Business to Business
- B2C – Business to Customer
- B2G – Business to Government
- CRM – Customer Relationship Management
- DESI – Digital Economy and Society Index
- ERP – Enterprise Resource Planning
- EU15 – Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom
- EU28 – all EU member states
- ICT – Information Communications Technologies
- Mbps – Megabits (Mb) per second
- NMS13 – Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovak Republic, Slovenia
- RFID – Radio-frequency identification
- SCM – Supply Chain Management
- SMEs – Small and Medium-sized Enterprises

# Executive Summary

In this report we examine the level of digital transformation of SMEs in Slovenia in comparison to SMEs from other EU countries. We take into consideration both the digital business environment (digital infrastructure such as Internet availability and digital skills of human capital) and the adoption of digital technologies. The introduction of digital technologies such as websites, social media, e-commerce, electronic information sharing and cloud computing simplifies and accelerates decision making, allows effective brand building, facilitates transactions and makes it possible to reach new customers.

## **Why is it so important for SMEs to go digital?**

Internet and digital tools become a must in the context of the Digital Single Market strategy. The regulations proposed within the DSM greatly enhance the opportunities stemming from successful digital transformation, as well as pose risks connected with losing markets and customers due to digital business illiteracy. Although the digital revolution affects both ICT and traditional businesses, it puts significant pressure on Small and Medium Enterprises (SMEs) that are relatively more sensitive to global competition occurring within the Internet compared to their stronger, bigger counterparts.

## **Are Slovenian SMEs ready to compete on the Digital Single Market?**

Our analysis shows that Slovenian enterprises are coping well with the introduction of digital technologies (2<sup>nd</sup> among the NMS13), which is mirrored in their intense engagement in e-commerce (both domestic and on the EU markets, 5<sup>th</sup> place in cross-border in the EU). On the other hand, they rarely use tools for supply chain management or customer relationship management and are reluctant to use cloud computing. When it comes to human capital, Slovenians report good digital skills (2<sup>nd</sup> in the NMS13 and 13<sup>th</sup> in the EU15), particularly software skills. However, Slovenian SMEs still do not make full use of the potential of digital transformation because of the uneven digitalization of their environment.

# Definitions

## **Digital transformation of enterprises**

Changes in the functioning of enterprises due to the adjustments in business environment associated with the new application of digital technologies

## **Digital business environment**

The digital skills of human capital and the development of digital infrastructure enabling utilisation of digital technologies

## **Digital skills of human capital**

Adoption and skillful utilisation of digital technologies by human capital

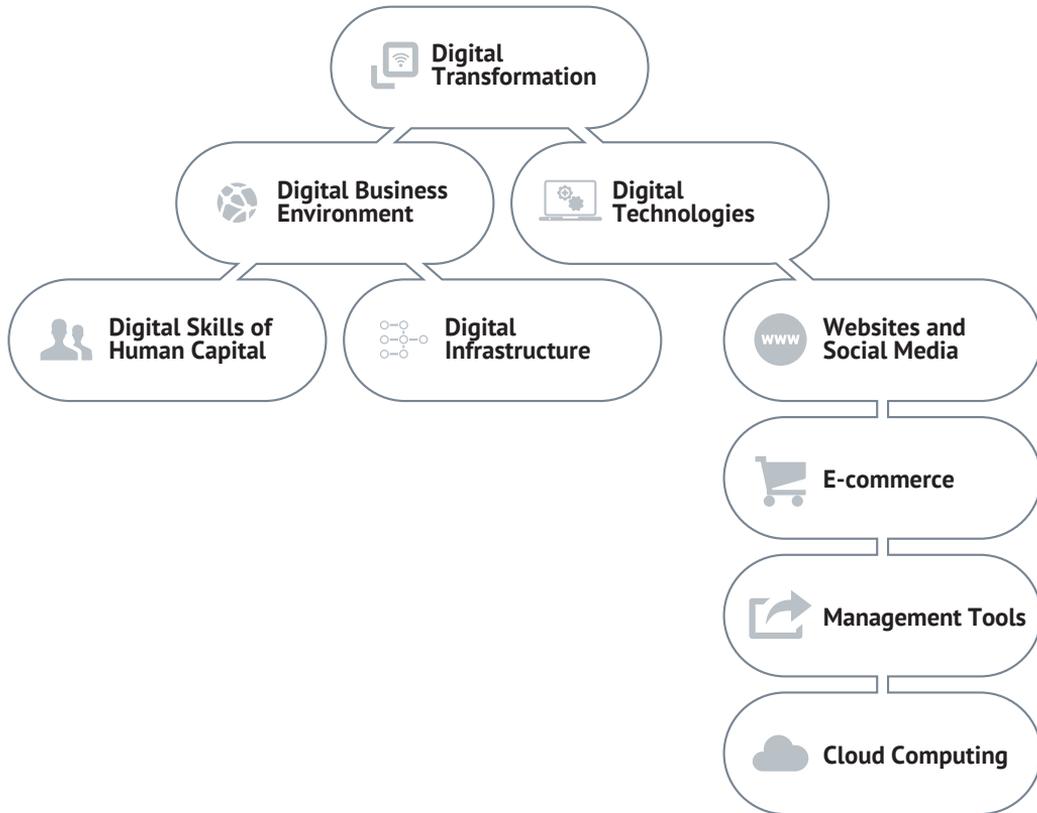
## **Digital infrastructure**

Structure needed for adoption and utilisation of digital technologies; facilities to interconnect components of digital business environment

## **Digital technologies**

Electronic tools, systems, devices and resources that generate, store or process data: websites, social media, e-commerce, management tools, cloud computing

# Main Concepts



Digital transformation enables and accelerates the smart integration of products and services into the economy and society. Its strongest effect lies in the optimal combination of digital technologies with digital business environment.

The more developed the digital infrastructure and digital skills within a society, the better the utilisation of digital technologies. Similarly, the higher the utilisation of digital technologies, the higher the demand for human capital to employ and upgrade digital inventions. Digital tools enable smart economic integration of production and delivery of products and services to customers. Digitally aware SMEs find new market opportunities with greater ease, grow their business partner networks faster and obtain quality feedback from their clients through customer relation management tools.

# Slovenia in a Nutshell

## Key findings for SMEs in Slovenia

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- Outperform the average regional level in the adoption of main digital technologies
- Engage in e-commerce including successful cross-border e-commerce across the EU28
- Invest in training to upgrade ICT-related skills of their employees



- Lack access to high-speed Internet

## Slovenia in the EU28

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- 11<sup>th</sup> in Integration of Digital Technology
- 13<sup>th</sup> in Human Capital



- 19<sup>th</sup> in Connectivity
- 21<sup>st</sup> in Digital Public Services
- 24<sup>th</sup> in Use of Internet

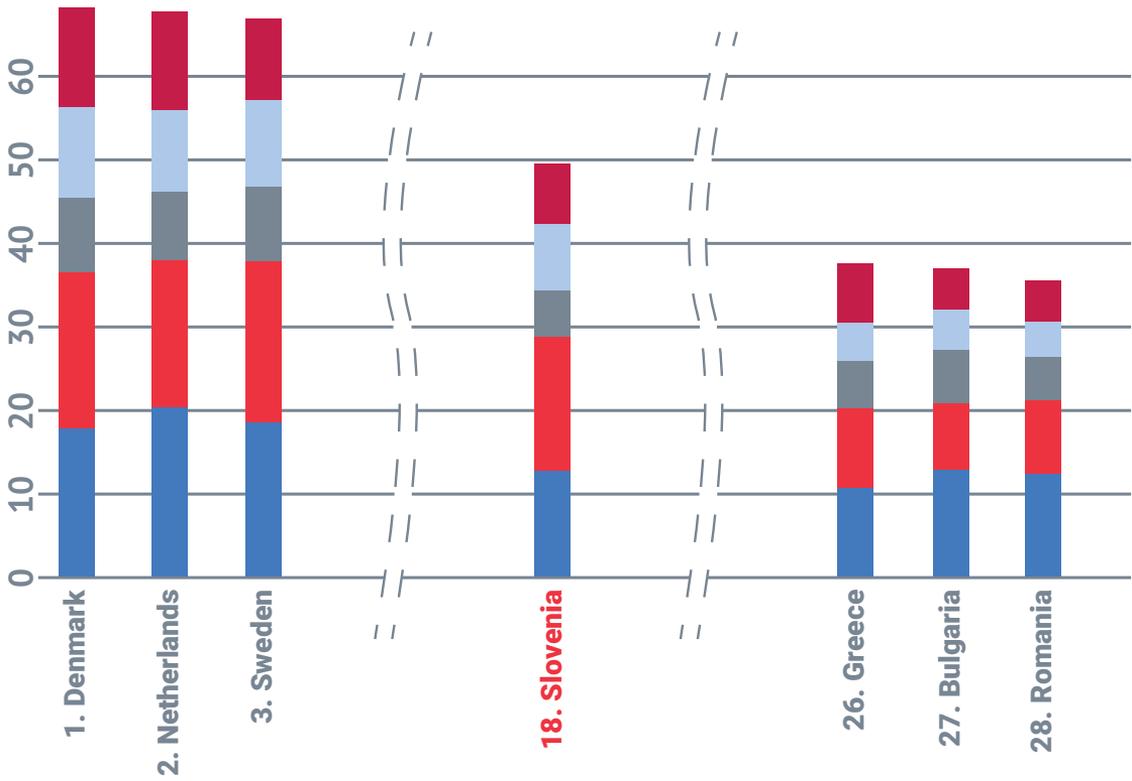
## Digital Map: Slovenia in the EU28

“Digital Economy and Society Index” (DESI) measures the degree of digital transformation of the EU member states. Namely, the index reports the level of development in the following categories: access, speed and quality of Internet infrastructure (represented by “Connectivity”), digital skills of society (“Human Capital” and “Use of Internet”), digitalisation of businesses (“Integration of Digital Technology”) and public e-services.

According to the DESI Index, Slovenia takes the 18<sup>th</sup> place among the EU28, but still shows many weaknesses that need to be overcome to boost digital transformation. The greatest challenge is the improvement in the Use of Internet, in which Slovenia takes the 24<sup>th</sup> place, and is the second worst among the NMS13 countries. In other words, the share of Slovenian Internet users engaged in various online services is relatively low. As an example, Slovenia has the third worst position in social networks usage by individuals among the EU member states.

When it comes to Connectivity (which measures the deployment of broadband infrastructure and its quality), the country takes the 19<sup>th</sup> place in the EU. Slovenia ranks 10<sup>th</sup> in the fixed broadband take-up, 25<sup>th</sup> in mobile broadband take-up and 22<sup>nd</sup> in the share of subscriptions to high-speed Internet. In terms of Human Capital, which measures the level of digital skills of the society, Slovenia ranks 13<sup>th</sup>, which is the second best result among the NMS13 countries, only behind Estonia. Finally, in terms of the development of Digital Public Services, which shows the online interactions between the public administration and the citizens, Slovenia takes the 21<sup>st</sup> place.

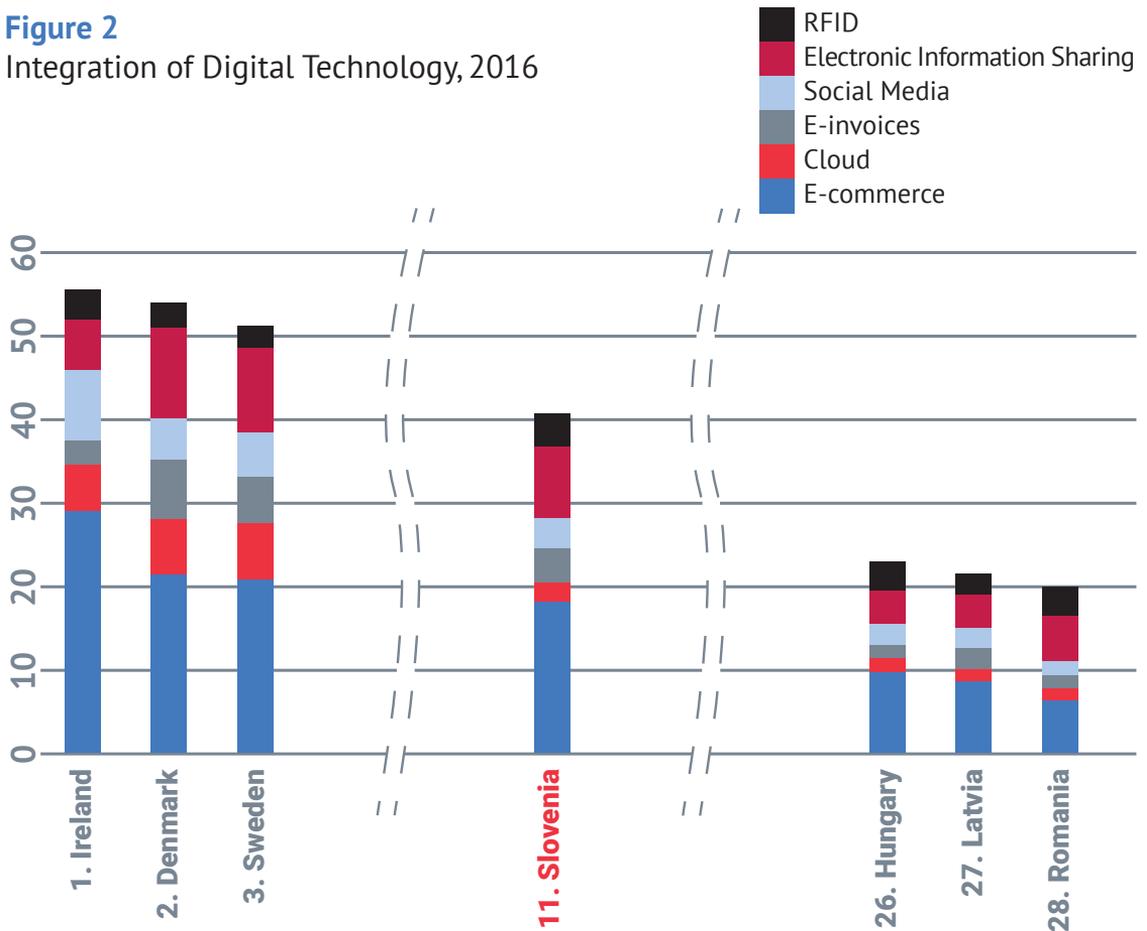
**Figure 1**  
DESI Index, 2016



Source: Digital Agenda for Europe, DESI

Integration of Digital Technology presents the level of Digital Transformation achieved by enterprises (with more than 10 employees). It is measured by the adoption of digital tools, like cloud computing services, and the engagement in e-commerce. Overall, the country ranks 11<sup>th</sup>, which is the second best result among the NMS13. More precisely, Slovenian enterprises rank 6<sup>th</sup> in e-invoices; 9<sup>th</sup> with respect to RFID; 12<sup>th</sup> in cloud computing services; 13<sup>th</sup> in the usage of social media; 16<sup>th</sup> in electronic information sharing services (i.e. management tools, like ERP). Slovenia ranks 4<sup>th</sup> in e-commerce turnover share (second to Czech Republic among NMS13) and 5<sup>th</sup> in cross-border e-commerce (3<sup>rd</sup> among NMS13, behind the Czech Republic and Malta).

**Figure 2**  
Integration of Digital Technology, 2016



Source: Digital Agenda for Europe, DESI



# Digital Business Environment for SMEs

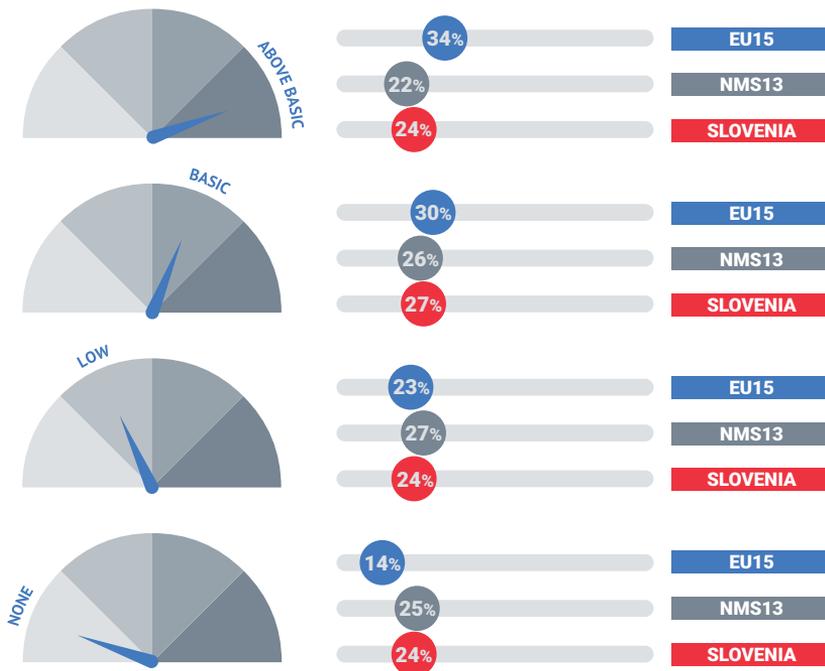
Digital Business Environment creates the common framework that enables SMEs to utilise digital technology and facilitates engagement of SMEs in the digital economy.

We assess Digital Business Environment by analysing the development of digital skills and digital infrastructure. More precisely, we consider the efforts of companies in hiring and training digitally skilled people (including, but not exclusively, ICT specialists) and we assess digital infrastructure by the access, affordability, speed and quality of the Internet.

# Digital Skills

When it comes to digital skills, Slovenians perform slightly better than other NMS citizens: most of them report overall “basic” or “above basic” digital skills. However, Slovenian individuals still lag behind the EU15: while every third EU15 citizen reports “above basic” skills, only every fourth Slovenian is capable of solving more advanced problems.

**Figure 3**  
Levels of digital skills amongst individuals (%), 2015

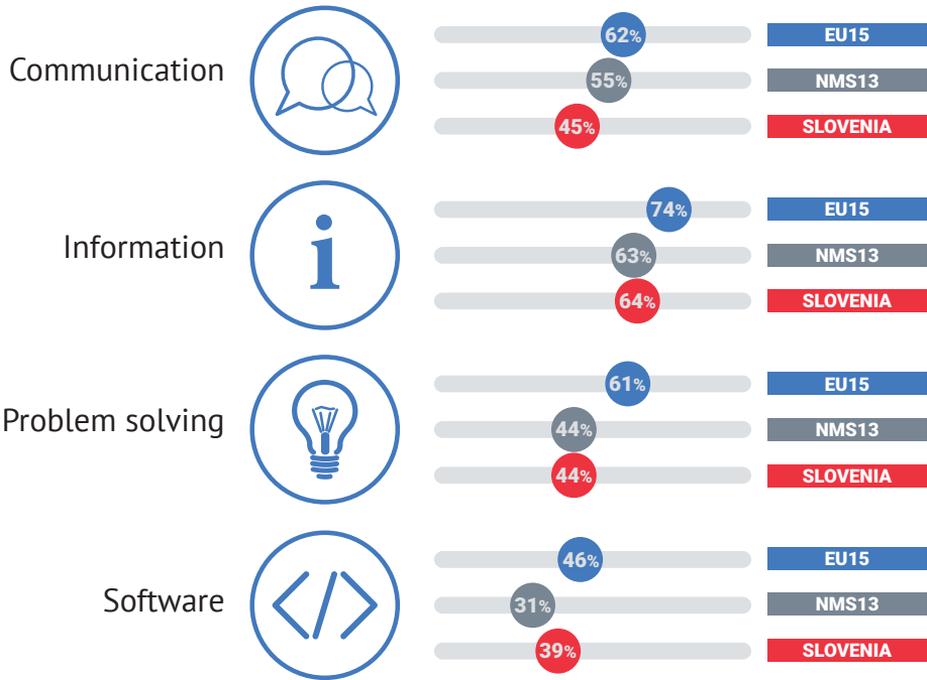


**Above basic skills** refer to the ability to carry out most of the tasks in all of four general categories (Communication, Information, Problem Solving and Software)  
**Basic skills** refer to the ability to carry out one specific task in each category  
**Low skills** refer to users who are unable to perform any tasks in up to 3 categories  
**No skills** refer to users who are unable to perform any tasks in all categories listed including those who have not accessed the Internet in the last 3 months

Source: DELab UW own calculations based on the data from Eurostat

The share of individuals with “above basic” information and problem solving skills is at the regional average level, while Slovenians exceed the region in software skills. On the other hand, Slovenia considerably lags behind other EU countries in communication skills.

**Figure 4**  
Individuals with “above basic” digital skills (%), 2015



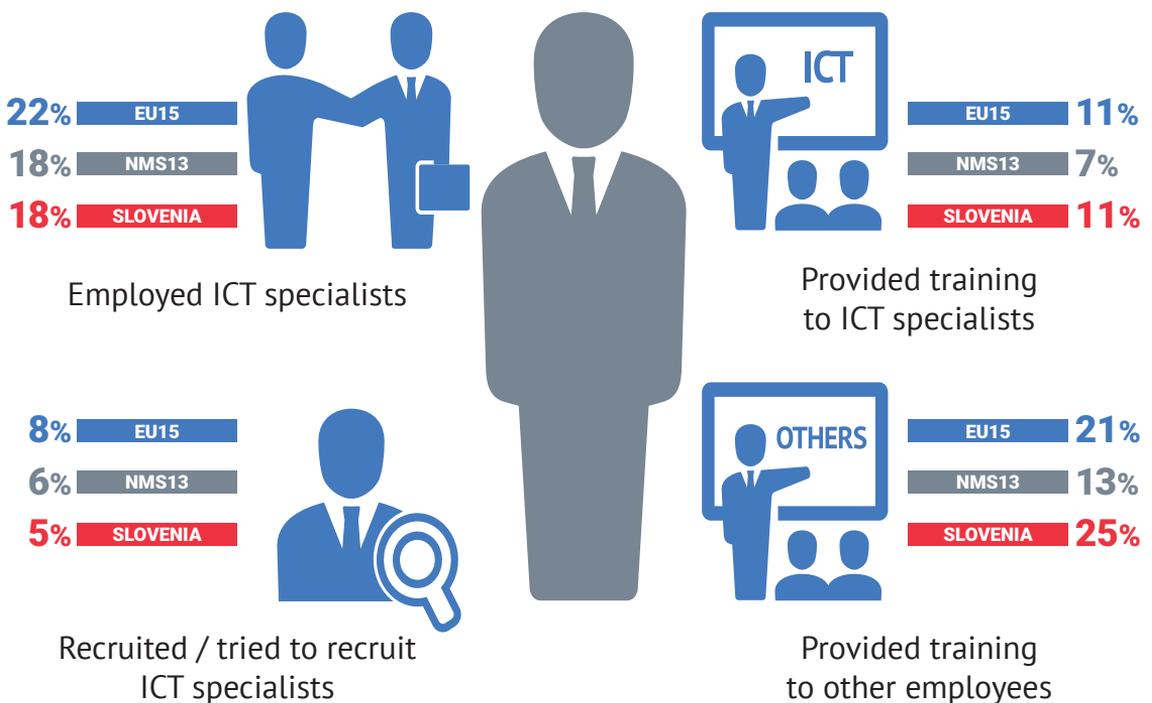
**Communication skills** include the ability to communicate online via e-mail, video calls or the social media  
**Information skills** show the ability to find relevant information online  
**Problem solving skills** represent the ability to manage files, change settings of software and use online services  
**Software skills** include the ability to use word processing, spreadsheet and multimedia editing software

Source: DELab UW own calculations based on the data from Eurostat

Slovenian SMEs outperform the NMS13 average in terms of demand for digitally skilled workforce. The share of SMEs employing ICT specialists is at the average regional level, however, Slovenian SMEs lead in providing trainings to improve ICT related skills of their employees. Similarly to the EU15, every tenth enterprise invests in training for ICT specialists. Moreover, Slovenian SMEs are even more actively training their other (non-ICT) employees: 25% of them upgrade the digital skills of their employees, compared to 21% in the EU15.

**Figure 5**

SMEs employing and training ICT specialists (%), 2015



Source: DELab UW own calculations based on the data from Eurostat



## Digital Infrastructure

The access to high-speed Internet should be the cornerstone of digital infrastructure. In Slovenia almost all SMEs have access to the Internet, which means Slovenian business is not constrained by a poor coverage.

**Figure 6**

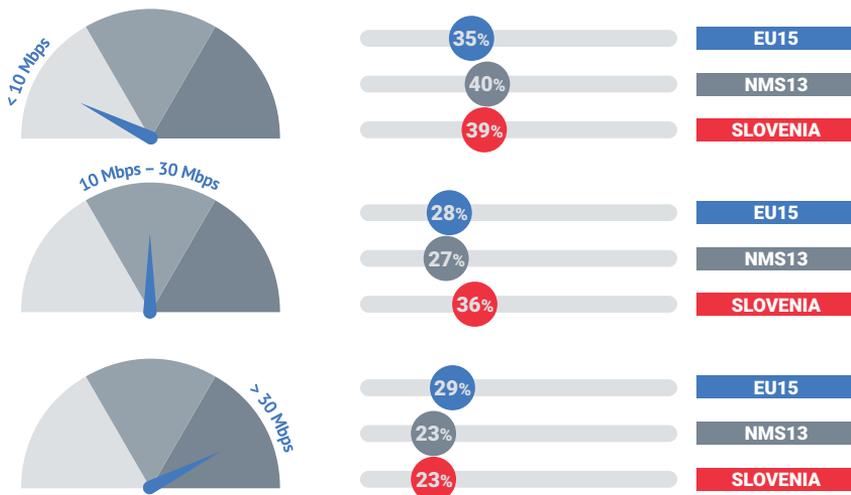
SMEs with no Internet access (%), 2015



Slovenian SMEs mainly use low (39%) and medium-speed (36%) Internet. Moreover, while in the EU15 every third SME has high-speed Internet access, in Slovenia only every fourth enterprise benefits from the high-speed Internet. It may be explained by the significant cost of access to high-speed Internet, Slovenia being the third most expensive country (following Malta and Cyprus).

**Figure 7**

SMEs according to the speed of their fixed Internet connection (%), 2015

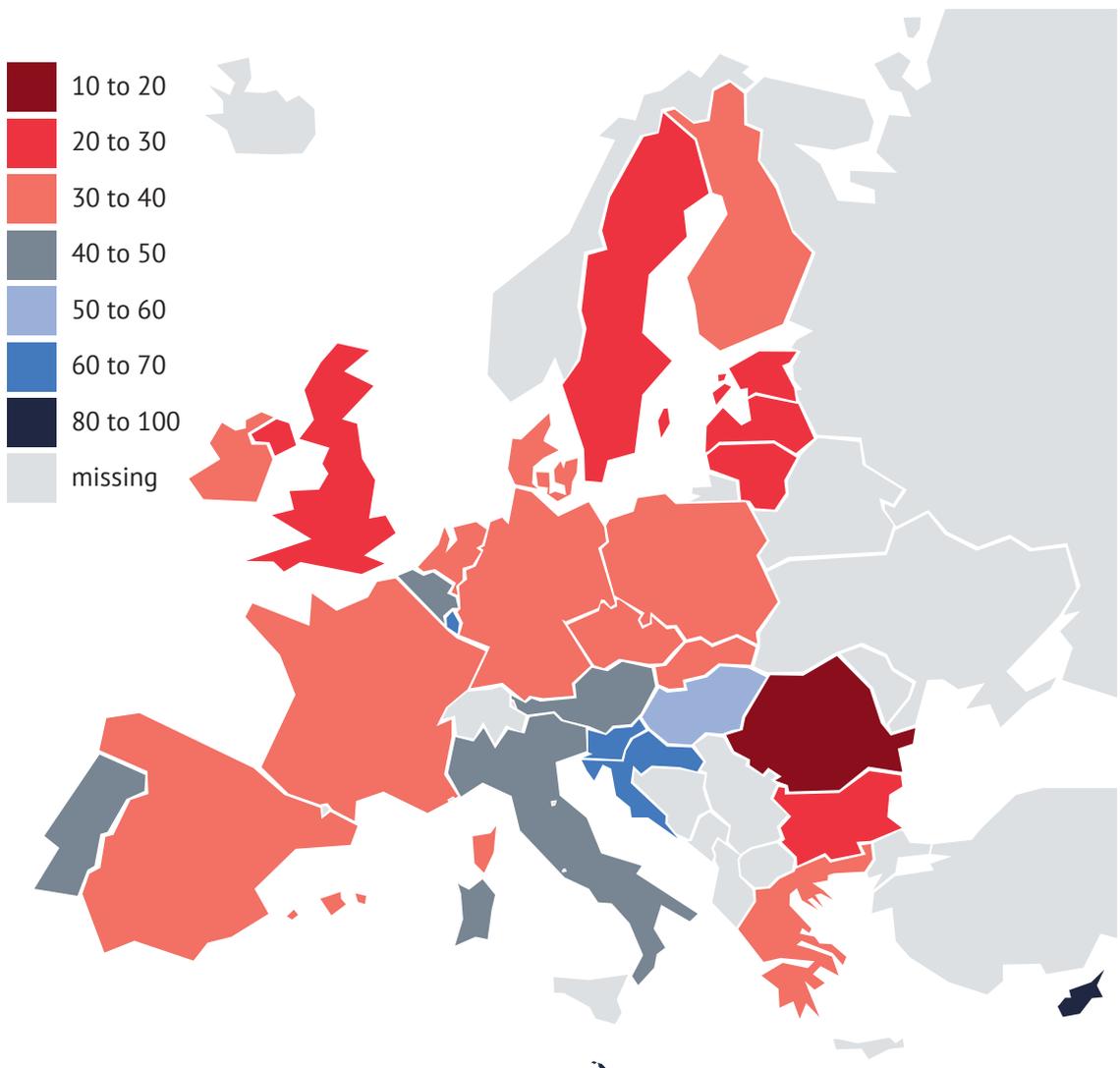


Source: DELab UW own calculations based on the data from Eurostat

While in the EU15, on average, the median price of monthly subscription is 37 euros, in Slovenia it reaches as high as 66 euros. It is the 3<sup>rd</sup> highest price in European Union, which might be a crucial barrier preventing Slovenians from subscribing to high-speed Internet.

### Figure 8

Median price of monthly subscription to the Internet (30-100 Mbps) in euros/PPP, 2015



Source: DELab UW own calculations based on the data from Eurostat



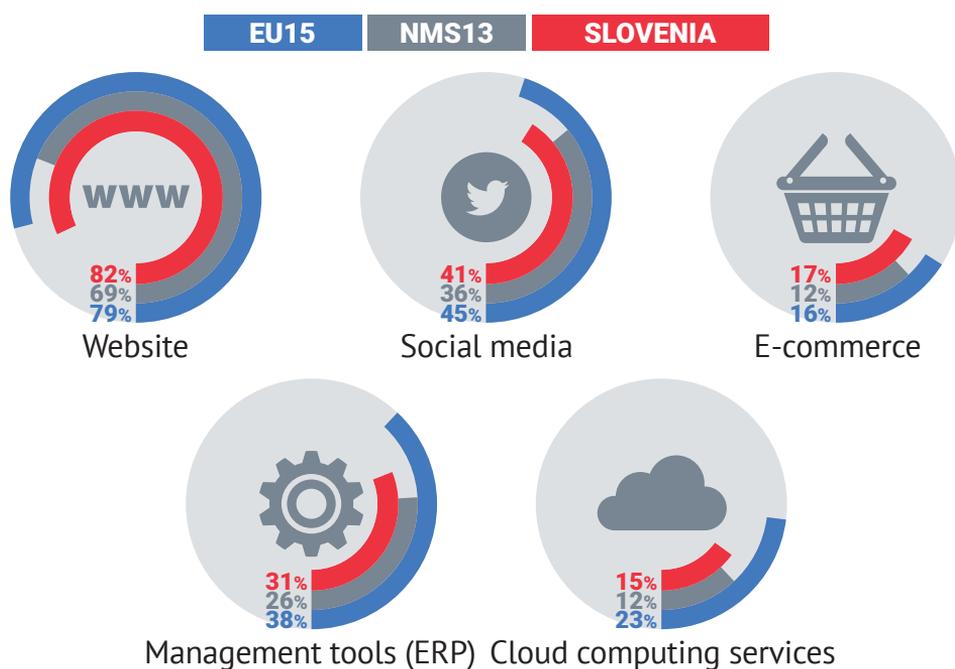
# Digital Technologies

The usage of digital technologies simplifies and accelerates decision making processes within the enterprise; allows more effective business analyses; facilitates the communication with business partners; allows effective image and brand building; and supports the penetration of new markets as well as reaching new customers. To measure the adoption of digital tools we consider the usage of five key technologies: websites, social media, e-commerce, management tools (like ERP) and cloud computing.

It is remarkable that Slovenian SMEs outperform the NMS13 countries in all categories of the main digital technologies usage. The share of enterprises that provides a website and engage in electronic sales even exceeds the average share of SMEs in the EU15.

**Figure 9**

SMEs using main digital technologies (%), 2015



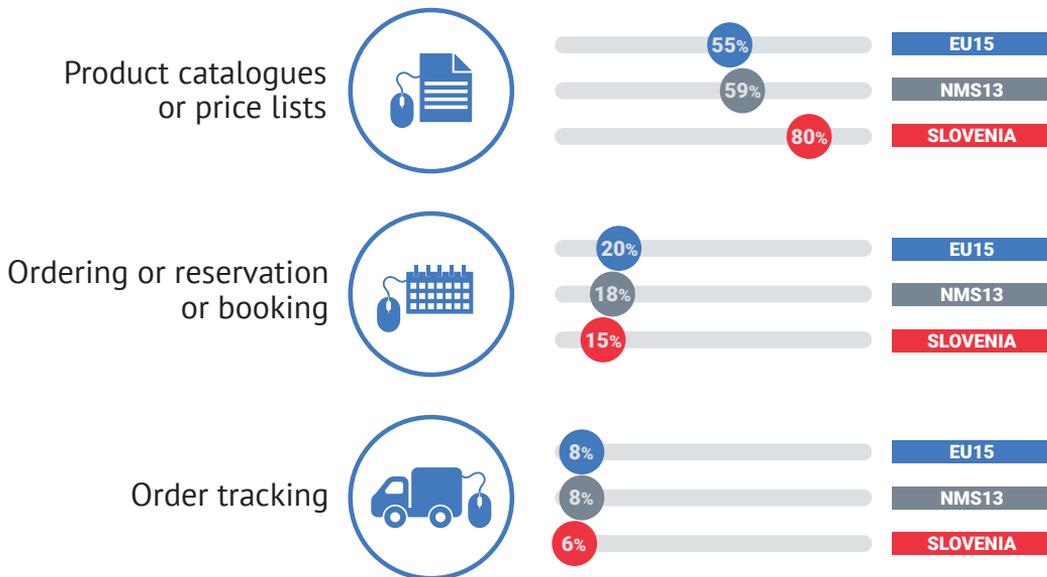
Source: DELab UW own calculations based on the data from Eurostat

## Websites and Social Media

The share of Slovenian SMEs with websites (82%) is above the EU15 level (79%). Slovenian SMEs, like enterprises in the EU members states, mainly use websites to provide information about products and prices. Furthermore, the share of SMEs in Slovenia that offer product catalogues and price lists reaches 80% and exceeds the average share in the EU15 by 25 percentage points. On the other hand, Slovenian SMEs slightly lag behind the average regional and the EU15 level when it comes to online ordering, reservation and booking or order tracking.

**Figure 10**

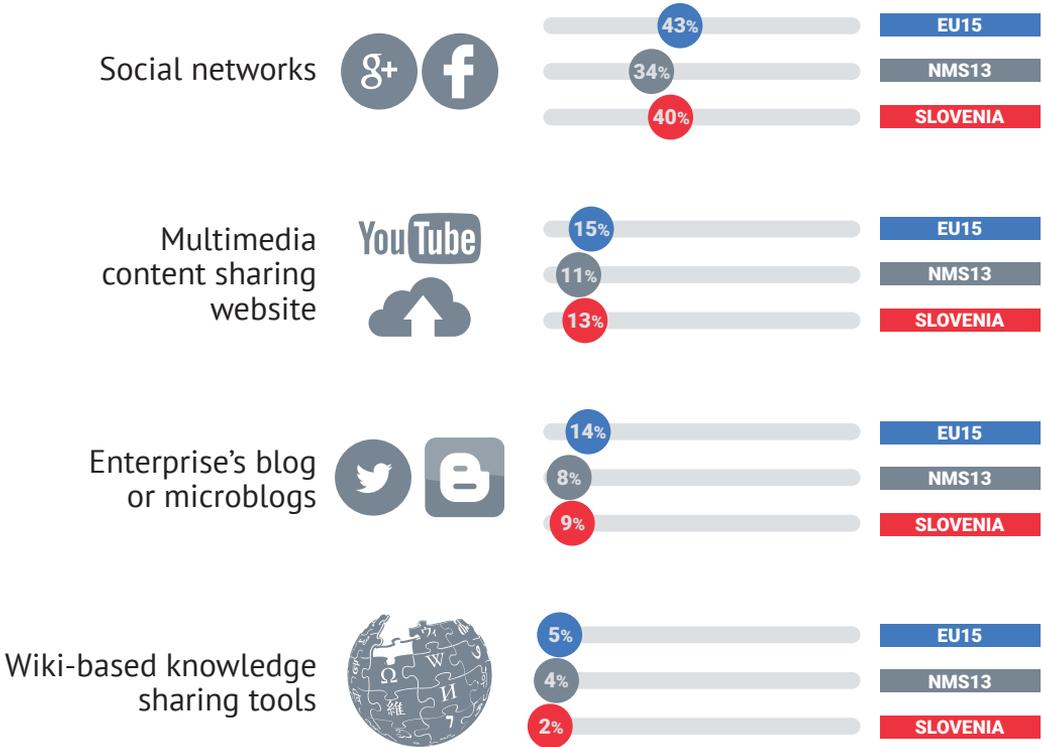
SMEs with websites providing selected services(%), 2015



Source: DELab UW own calculations based on the data from Eurostat

Social media services are seen by Slovenian SMEs as business opportunities. The share of SMEs using social networks (e.g. Facebook), multimedia sharing sites (e.g. Youtube) and microblogs (e.g. Twitter) is significantly higher than the NMS13 average. However, wiki-based solutions are not as popular in Slovenia as in the other EU28 countries.

**Figure 11**  
SMEs using social media services (%), 2015

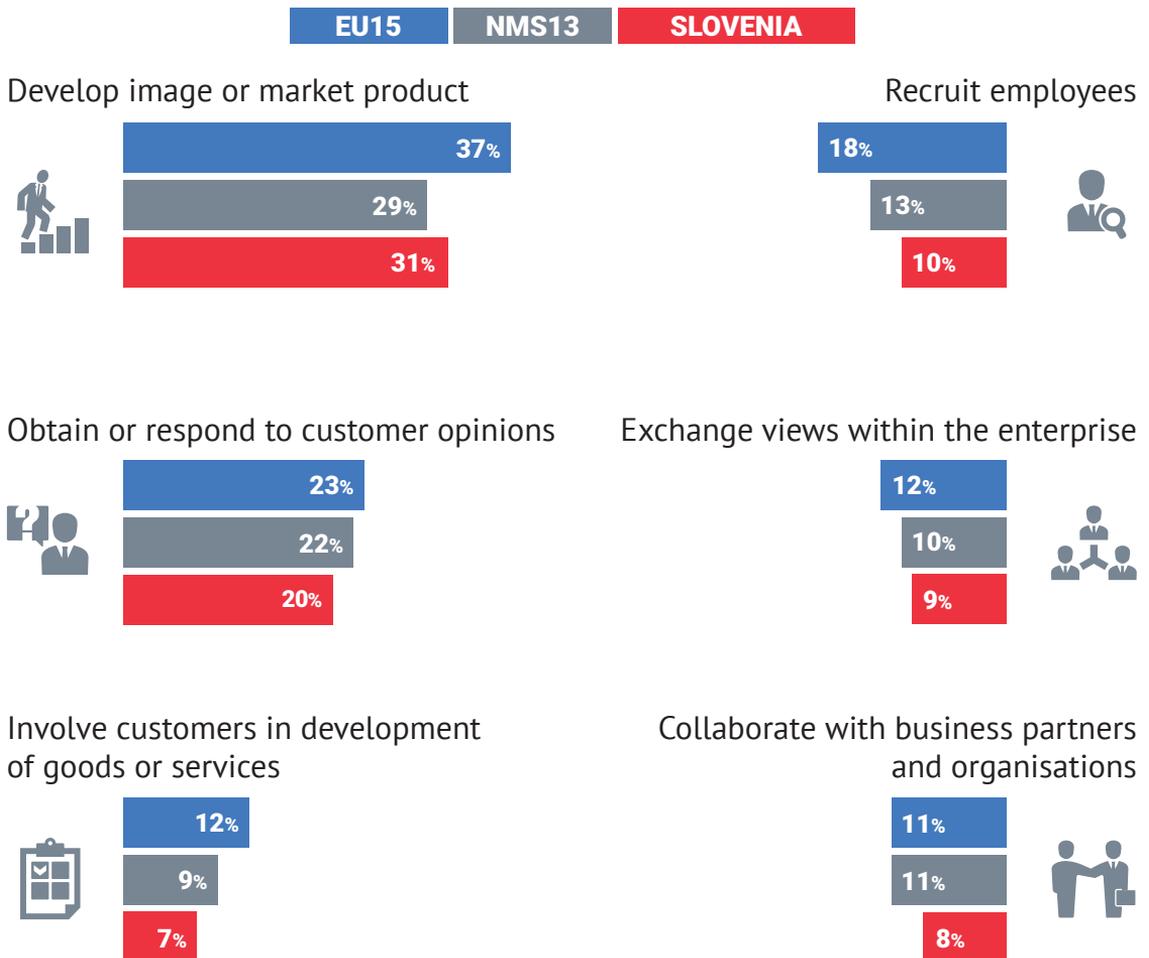


Source: DELab UW own calculations based on the data from Eurostat

When analysing social media services in greater detail, SMEs in Slovenia seem to use the social media very selectively. Apart from the use of social media for developing image and market products, in all other categories Slovenian enterprises lag behind both the regional, as well as the EU15 level.

**Figure 12**

Reasons for using social media services by SMEs (%), 2015



Source: DELab UW own calculations based on the data from Eurostat



# E-commerce

An **e-commerce transaction** is the sale or purchase of goods or services conducted over computer networks

**Business to Consumer (B2C)** refers to sales to private consumers

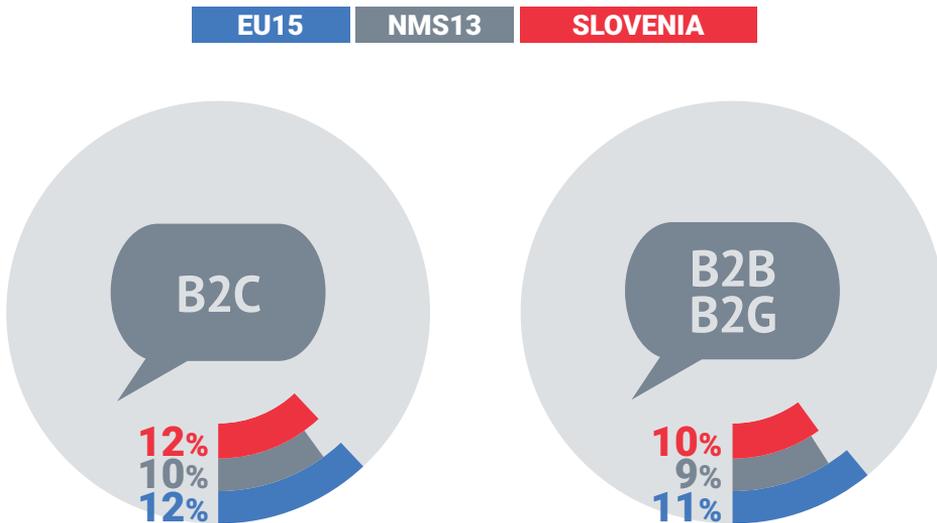
**Business to Business (B2B)** refers to sales to other enterprises

**Business to Government (B2G)** refers to sales to public authorities

Slovenian SMEs are among the European leaders in e-commerce. The share of SMEs selling via website or apps is higher than the EU averages (17% to 16% in EU15 and 12% in NMS13). The most frequently used channels of e-commerce are sales to customers (B2C).

**Figure 13**

SMEs selling via a website or apps (%), by type of transaction, 2015

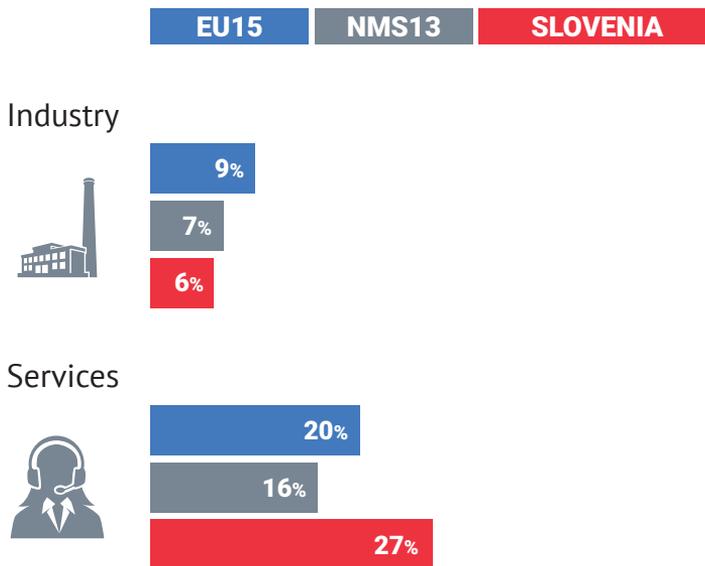


Source: DELab UW own calculations based on the data from Eurostat

Slovenian e-commerce is mainly concentrated in services, especially in tourism (in both B2B and B2C). Overall, 27% of Slovenian SMEs sell via a website or apps in the services sector, while only 6% in industry. More specifically, the largest share of enterprises selling online provides accommodation (62%), works as a travel agency (35%), is a publisher (34%) or repairs ICT equipment (26%).

**Figure 14**

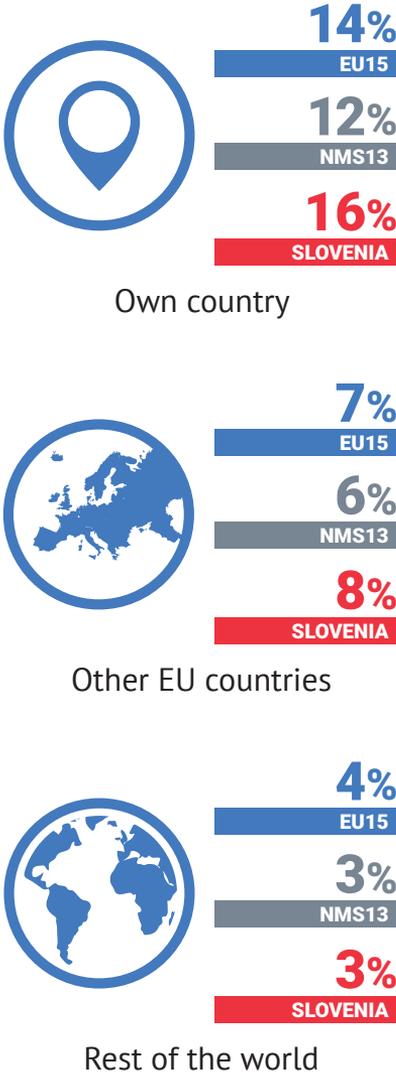
SMEs selling via a website or apps, according to sectors (%), 2015



Source: DELab UW own calculations based on the data from Eurostat

The majority of Slovenian SMEs that are involved in e-commerce realise their sales within the country. However, Slovenian enterprises pioneer in cross-border e-commerce within the European Union, but are visibly less engaged in e-commerce with the rest of the world.

**Figure 15**  
SMEs engaged in electronic sales (%), 2015



Source: DELab UW own calculations based on the data from Eurostat



## Management Tools

**Management tools (Enterprise Resource Planning - ERP)** enable automatic flow of information between different business functions such as accounting, planning, production and marketing.

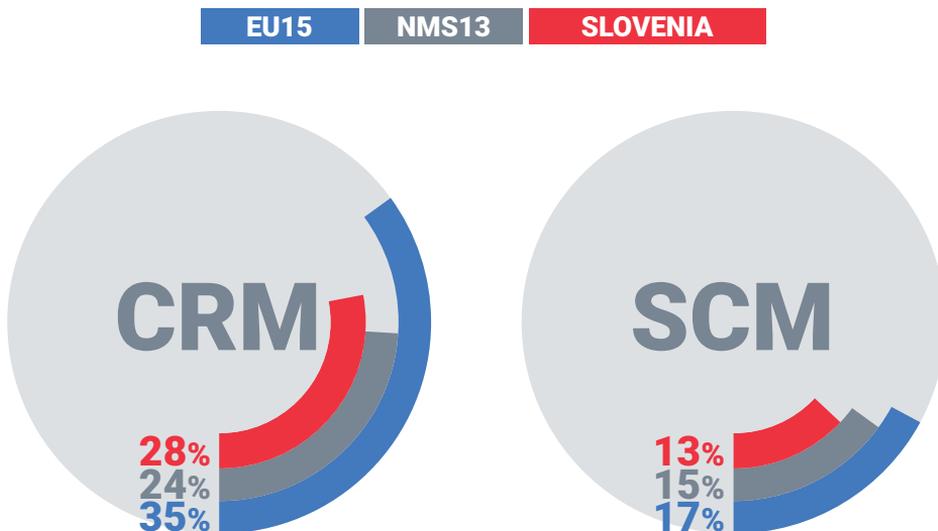
**Supply Chain Management (SCM)** means exchanging all types of information with suppliers and/or customers about the availability, production, development and distribution of goods or services.

**Customer Relationship Management (CRM)** is a management methodology which places the customer at the centre of the business activity, based on an intensive use of information technologies to collect, integrate, process and analyse information related to the customers.

The share of Slovenian SMEs that use CRM software exceeds the average regional level, but there is a lot of room for improvement compared to the EU15. Moreover, in the usage of SCM, Slovenian enterprises fall behind both the average NMS13, as well as EU15 performances.

**Figure 16**

SMEs using CRM and SCM software (%), 2015



Source: DELab UW own calculations based on the data from Eurostat



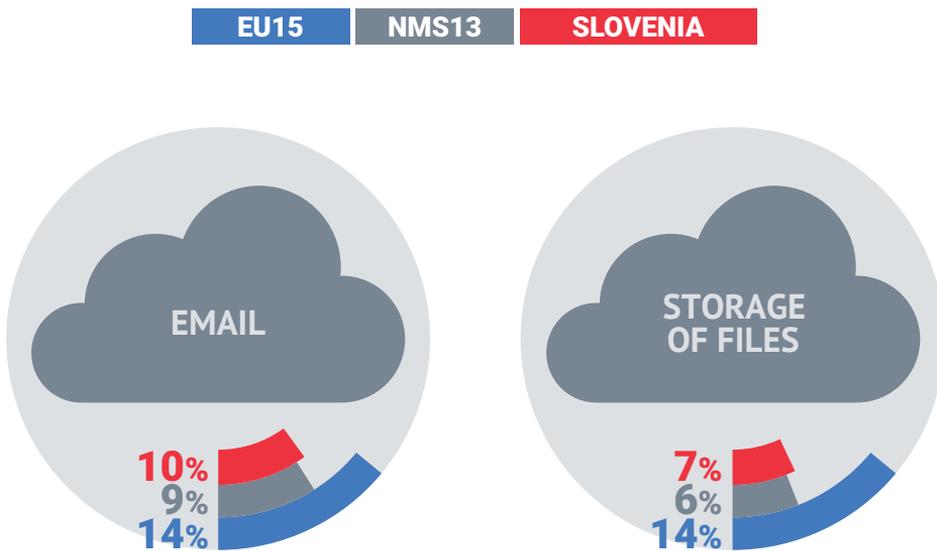
# Cloud Computing

**Cloud Computing (CC)** refers to ICT services that are used over the Internet to access software, computing power, storage capacity, etc.

The usage of cloud computing services by Slovenian SMES is relatively low. Only 15% of them use CC services, which is above the NMS13 level (12%), but still below the EU15 average (23%). Being advanced users of computing power to run their own software, they almost reach the EU15 level, however, they lag behind in the other cloud tools.

**Figure 17**

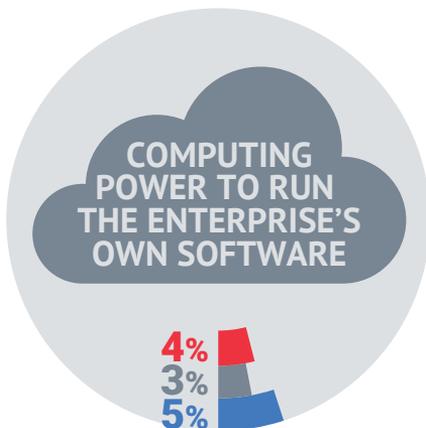
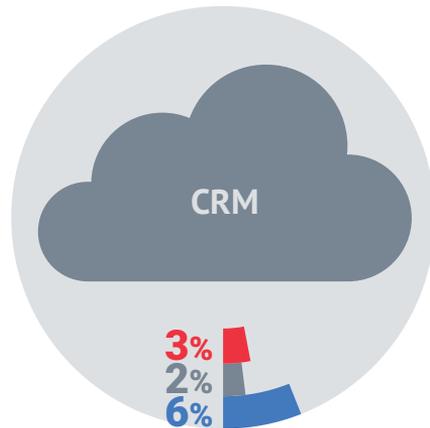
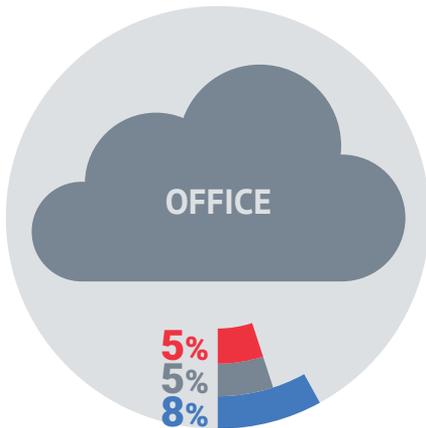
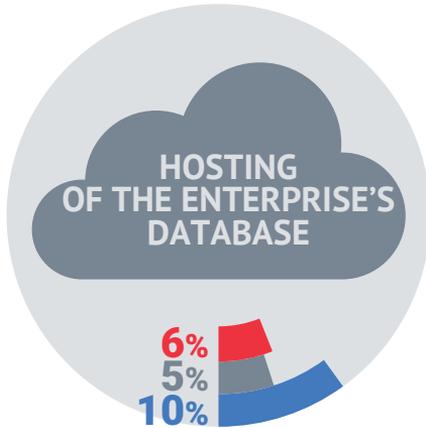
SMEs buying selected Cloud Computing services (%), 2014



EU15

NMS13

SLOVENIA



Source: DELab UW own calculations based on the data from Eurostat



# Conclusions

## What have we found?

- The Slovenian SMEs take a leading position in e-commerce (both B2B and B2C) with respect to other EU markets and willingly use social media tools. They are in a good position to make a breakthrough in their digital transformation as they benefit from a workforce with sufficient digital skills. Additionally, they understand the need for training of employees to improve their digital skills.

## What are the challenges?

- Slovenian enterprises need to get better access to high-speed and cheap Internet. They can also focus more on the benefits of specific digital tools, particularly SCM and cloud services.

## What needs to be done?

- Make further improvement to digital infrastructure, particularly in the distribution of fast and cheap Internet access.
- Invest in training in communication skills for the workers.
- Enhance the usage of social media in SMEs for contacting customers and marketing.
- Continue adoption of more advanced digital technologies, particularly in the area of cloud computing.







Digital Economy Lab (DELab) is a research centre established in 2014 within the University of Warsaw to accelerate the development of digital economy and society by providing high-quality research on the impacts of digital transformation and innovation. By application of data science methods DELab examines how digital markets, skills and societies build smart economies, businesses and governance. We deliver policy recommendations on how to better meet the challenges of global digitalisation. Our studies promote entrepreneurship and enhance society's awareness of the benefits of digital transformation. DELab's interdisciplinary team consists of professors and young researchers from various academic backgrounds including economics, sociology, law, administration, IT, European integration, philosophy, political sciences, globalisation, management and entrepreneurship.

