File No.: 5.27.006.024.001

STATISTICAL SERVICE
1444 NICOSIA

CONFIDENTIAL

SURVEY ON ICT USAGE AND E-COMMERCE IN ENTERPRISES 2020

	FOR OFFICIAL USE ONLY	
	S/N	⌊_⌊_⌊_⌊_⌋
	Legal Status	⌊_⌊_⌋
	Enterprise Size	⌊_⌋
	NACE	⌊_⌊_⌊_⌊_⌋

GENERAL INFORMATION:

1. The aim of the survey is to collect data about the use of information and communication technologies by the enterprises, the access and use of the Internet, e-commerce, invoicing, use of cloud computing services, big data analysis, the employment of ICT specialists, internet of things, use of 3D printing technologies and the use of robotics. These data are necessary for the implementation of policy programmes of both the Goverment and the Private Sector.

2. All requested information must be supplied by the **IT manager of the enterprise**. Regarding the enterprise's background information (Module X), these should be provided by the General Manager or by the Accountant or by any other person responsible.

3. An authorised employee of the Statistical Service will contact the IT manager of the enterprise by phone in order to arrange an appoitment in order to fill in the questionnaire.

4. Definitions of the terms used in the questionnaire can be found in the glossary attached.

5. The reference period for the data is the survey period (2020), unless the question refers to other specific period.

6. The collection of data is carried out in accordance with the Statistics Law 15(I)/2000. The Statistical Service is bound by the Statistics Law to treat all information obtained as **CONFIDENTIAL.** Your responses will be used solely for statistical purposes.

S. Karagiorgis
Director
Statistical Service

January, 2020

MODULE A: Access and use of the Internet

A1. **Please answer (a) or (b):**

a) How many persons employed have access to the Internet for business purposes? (including fixed line and mobile connection)

or

b) Indicate an estimate of the percentage of the total number of persons employed who have access to the Internet for business purposes.

☐☐☐☐	
☐☐☐ %	

Use of a fixed broadband connection to the Internet for business purposes

A2.	**Does your enterprise use any type of fixed line connection to the Internet?** (e.g. ADSL, SDSL, VDSL, fiber optics technology (FTTH), cable technology (CableNet), etc.)	**Yes** ☐	**No** ☐ → Go to A5

A3. **What is the maximum contracted download speed of the fastest fixed line Internet connection of your enterprise?**

a) Less than 30 Mbit/s	☐
b) At least 30 Mbit/s but less than 100 Mbit/s	☐
c) At least 100 Mbit/s but less than 500 Mbit/s	☐
d) At least 500 Mbit/s but less than 1 Gbit/s	☐
e) At least 1 Gbit/s	☐

A4.	**Is the speed of your fixed connection(s) to the internet usually sufficient for the actual needs of the enterprise?**	**Yes** ☐	**No** ☐

Use of a mobile connection to the Internet for business purposes

A mobile connection to the internet means the usage of portable devices connecting to the internet through mobile telephone networks for business purposes. Enterprises provide portable devices and pay for all or at least up to a limit, the subscription and the use costs.

		Yes	No
A5.	**Does your enterprise provide <u>portable</u> <u>devices</u> that allow a <u>mobile</u> connection to the Internet using mobile telephone networks, for business purposes ?** (e.g. via portable computers or other portable devices such as Smartphones)	☐	☐ **→ Go to A7**
A6.	**a) How many persons employed use a <u>portable</u> <u>device</u> provided by the enterprise, that allows Internet connection via mobile telephone networks, for business purposes?** (e.g. portable computers, tablets or other portable devices like Smartphones) or **b) Indicate an estimate of the percentage of the total number of persons employed who use a <u>portable</u> <u>device</u> provided by the enterprise, that allows Internet connection via mobile telephone networks, for business purposes.**	☐☐☐☐ ☐☐☐ %	

Use of a Website

		Yes	No
A7.	**Does your enterprise have a Website[31]?** **<u>If yes,</u> give the address of your website:** ……	☐	☐ → Go to A9

A8. Does the Website of your enterprise have any of the following?

	Yes	No
a) Description of goods or services, price lists	☐	☐
b) Online ordering or reservation or booking (e.g. shopping cart)	☐	☐
c) Possibility for visitors to customise or design online goods or services	☐	☐
d) Tracking or status of orders placed	☐	☐
e) Personalised content in the website for regular/recurrent visitors	☐	☐
f) Links or references to the enterprise's social media[26] profiles	☐	☐

A9. Does your enterprise have the following chat service for customer contacts?

	Yes	No
a) A chat service where a person replies to customers	☐	☐
b) A chatbot[5] or virtual agent replying to customers	☐	☐

Module B: e-Commerce

(Scope: enterprises with access to the internet, i.e. if A1>0)

e-Commerce[12] is the sale or purchase of goods or services conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders. The payment and the delivery of the goods or services do not have to be conducted online.

e-Commerce transactions **exclude** orders made by manually typed e-mail messages.

e-Commerce Sales

In the following questions please report separately for web sales and EDI-type sales[10]

Web sales[29] of goods and services

Web sales covers orders, bookings and reservations placed by your customers via

- the enterprise's websites or apps :
  - online store (webshop)
  - web forms[30]
  - extranet[15] (webshop or web forms)
  - booking/reservation applications for services
  - apps[3] for mobile devices or computers
- e-commerce marketplace websites or apps (used by several enterprises for trading goods or services)

		Yes	No
B1.	**During 2019, did your enterprise have web sales of goods and services via:**		
a)	your enterprise's website or "apps"? (including those of parent or affiliate enterprises, extranets)	☐	☐
b)	an e-commerce marketplace website or "apps" used by several enterprises for trading products? (e.g. Booking, eBay, Amazon, Amazon Business, Alibaba, Rakuten, etc.)	☐	☐

If both B1 a) and B1 b) = "No" then go to B7

B2.	**Please state for 2019 (answer (a) or (b)):**	
a)	**What was the value of your web sales of good and services (in monetary terms, excluding VAT)**	€
	If you can't provide this value,	
b)	**Indicate an estimate of the percentage of the total turnover resulting from web sales of goods and services**	%

Question B3 should be answered only if both B1 a) and B1 b) = "Yes"

B3. **What was the percentage breakdown of the value of web sales in 2019 for the following:**
(Please refer to the value of web sales you repeorted in B2) If you cannot provide the exact percentages an approximation will suffice.

a)	via your enterprise's website or "apps"? (including extranets)	%
b)	via an e-commerce marketplace [18] website or "apps" used by several enterprises for trading products? (e.g. Booking, eBay, Amazon, Amazon Business, Alibaba, Rakuten, etc.)	%
c)	**TOTAL**	1 0 0 %

Question B4 should be answered only if B1 b) = "Yes"

B4. **Via how many e-commerce marketplaces did you have web sales during 2019?**

a)	Via one	☐
b)	Via two	☐
c)	Via more than two	☐

If only B4a = "Yes" then go to B6

		Yes	No
B5.	**Did more than half of your turnover from e-commerce marketplaces in 2019 come from only one e-commerce marketplace?**	☐	☐

B6. **Please provide a percentage breakdown of the value of web sales in 2019 by type of customer** (estimates in percentage of the monetary values, excluding VAT)

a) **B2C** (Sales to private consumers)	___ %
b) **B2B** (Sales to other enterprises) **and B2G** (Sales to public authorities)	___ %
c) **TOTAL**	100 %

EDI-type sales

EDI-type sales[10] EDI-type sales cover orders placed by your customers via EDI-type messages (EDI: Electronic Data interchange) meaning:

- in an agreed or standard format suitable for automated processing
- EDI-type order message created from the business system of the customer
- including orders transmitted via EDI-service provider
- including automatic system generated demand driven orders
- including orders received directly into your ERP system

Examples of EDI : EDIFACT, XML/EDI (e.g. UBL, Rosettanet)

B7. **During 2019, did your enterprise have EDI-type sales of goods or services?**

Yes ☐ **No** ☐ → **Go to C1**

B8. **Please state for 2019 (answer (a) or (b)):**

a) **The value of your EDI-type sales of goods and services**

(in monetary terms, excluding VAT)

€ _____

If you can't provide this value,

b) **Indicate an estimate of the percentage of the total turnover resulting from EDI-type sales**

___ %

MODULE C: Invoicing

(Scope: enterprises with access to the internet, i.e. if A1>0)

There are invoices in **paper form** and **electronic form**. Invoices in **electronic form** are of two types:

- **eInvoices**[11] in a standard structure **suitable for automated processing**.
(e.g. EDI[9], UBL[28], XML[34]). They are exchanged either directly or via service operators or via an electronic banking system.

- **Invoices** in electronic form **not suitable for automated processing**.
(e.g. e-mails, e-mail attachment as pdf, images in TIF, JPEG or other format)

		Yes	No
C1.	**In 2019, did your enterprise send any of the following types of invoices:** (Include also invoices sent via intermediaries, e.g. accountants, e-invoice service providers, etc.)		
	a) Invoices in electronic form, in a standard structure **suitable for automated processing** (e-invoices) (EDI (e.g. EDIFACT), XML (e.g. UBL) Excluding the transmission of PDF files	☐	☐
	b) Invoices in electronic form **not suitable for automated processing** (e.g. emails, JPEG or other format) Including the transmission of PDF files	☐	☐
	c) Paper Invoices	☐	☐

If C1a) answered with 'Yes', go to C2, otherwise go to D1.

C2.	**Concerning e-Invoices: In 2019, out of all invoices your enterprise sent (in electronic or paper form) to private customers, other enterprises or public authorities, how many were e-invoices in a standard structure suitable for automated processing?**	
	a) Less than 10%	☐
	b) At least 10% but less than 25%	☐
	c) At least 25% but less than 50%	☐
	d) At least 50% but less than 75%	☐
	e) At least 75%	☐

MODULE D: Use of cloud computing services

(Scope: enterprises with access to the internet, i.e. if A1>0)

Cloud computing refers to **ICT services** that are used **over the Internet** to access software, computing power, storage capacity etc.; where the services have all of the following **characteristics:**
- are delivered from **servers** of service providers
- can be easily **scaled up or down** (e.g. number of users or change of storage capacity)
- can be used **on-demand by the user**, at least after the initial set up (without human interaction with the service provider)
- are **paid** for, either per user, by capacity used, or they are pre-paid

Cloud computing may include connections via Virtual Private Networks (VPN)

D1.	**Does your enterprise buy any cloud computing services used over the Internet?** (Please refer to the definition of cloud computing above, **exclude free of charge services)**	**Yes** ☐	**No** ☐ **→ Go to E1**

D2.	**Does your enterprise buy any of the following cloud computing services used over the Internet?** (Please refer to the definition of cloud computing above, **exclude free of charge services)**	**Yes**	**No**
a)	E-mail (e.g. Email Enterprise, Microsoft Exchange Online / Office 365, etc.) (as a cloud computing service)	☐	☐
b)	Office software[22] (e.g. word processors, spreadsheets (e.g. Microsoft Office Cloud), etc.)) (as a cloud computing service)	☐	☐
c)	Hosting the enterprise's database(s) (e.g. Enterprise DB, LongJump, Elustra, etc.) (as a cloud computing service)	☐	☐
d)	Storage of files (e.g. Dropbox, Amazon S3, EMC Mozy, Acronis Online, Diino, etc.) (as a cloud computing service)	☐	☐
e)	Finance or accounting software applications (e.g. StepStone, Hubwoo, SAP Business ByDesign, etc.) (as a cloud computing service)	☐	☐
f)	Customer Relationship Management (CRM[7], software application for managing information about customers (e.g. Salesforce.com, Oracle CRM on Demand, etc.)) (as a cloud computing service)	☐	☐
g)	Computing power to run the enterprise's own software (e.g. Amazon EC2, Flexiscale, Joyent, etc.) (as a cloud computing service)	☐	☐

Module E: Big data analysis

(Scope: enterprises with access to the internet, i.e. if A1>0)

Big data are generated from activities that are carried out electronically and from machine-tomachine communications (e.g. data produced from social media activities, from production processes, etc.)

Big data typically have characteristics such as:

Significant **volume** referring to vast amounts of data generated over time.

Variety referring to the different format of complex data, either structured or unstructured (e.g. text, video, images, voice, docs, sensor data, activity logs, click streams, coordinates, etc.).

Velocity referring to the high speed at which data is generated, becomes available and changes over time.

Big data analysis refers to the use of techniques, technologies and software tools for analysing big data extracted from your own enterprise's data sources or other data sources.

		Yes	No
E1.	**During 2019, did your enterprise perform big data analysis on any of the following data sources?** (Please exclude big data analysis conducted by external service providers)		
	a) Data from smart devices or sensors (e.g. Machine to Machine -M2M- communications, digital sensors, Radio frequency identification tags RFID, etc.) (in the context of big data)	☐	☐
	b) Geolocation data from the use of portable devices (e.g. portable devices using mobile telephone networks, wireless connections or GPS) (in the context of big data)	☐	☐
	c) Data generated from social media (e.g. social networks, blogs, multimedia content sharing websites, etc.) (in the context of big data)	☐	☐
	d) Other big data sources not specified above	☐	☐
	If at least one "yes" in E1a)-d) then go to E2.		
E2.	**During 2019 did your enterprise use any of the following methods to analyse big data?**	**Yes**	**No**
	a) Machine Learning[19] (e.g. deep learning - involves 'training' a computer model to better perform an automated task, e.g. pattern recognition.)	☐	☐
	b) Natural language processing[21], natural language generation[20] or speech recognition NLP, NLG and speech recognition is the ability for a computer program to understand human language as it is spoken, to convert data into natural language representation or to identify words and phrases in spoken language and convert them to a machine-readable format.	☐	☐
	c) Other methods of big data analysis	☐	☐

E3.	**During 2019, did your enterprise have another enterprise or organisation perform big data analysis for your enterprise?**	**Yes** ☐	**No** ☐
	Questions E4 and E5 are presented only to respondents who answered only 'No' to E1a-d and 'No' to E3 i.e. enterprises that were not involved in big data analysis (by themselves or by others).		
E4.	**Has your enterprise ever considered performing <u>big data analysis</u>?** (Either conducted by your enterprise's own employees or by other enterprises or organisations)	**Yes** ☐	**No** ☐ → Go to E6
E5.	**Are any of the following factors a reason for your enterprise not to perform big data analysis? (**Please include reasons for not having other enterprises or organisations performing big data analysis for your enterprise)	**Yes**	**No**
	a) The costs seemed too high compared to the benefits	☐	☐
	b) Insufficient human resources, knowledge, skills E.g. the required specialists are insufficiently available within the enterprise, or it is difficult to hire them	☐	☐
	c) Insufficient sources of big data, either from within or outside your enterprise, that would be needed to perform big data analysis	☐	☐
	d) Insufficient ICT infrastructure E.g. a lack of adequate software or hardware to perform the required processing and analysis	☐	☐
	e) Difficulties in complying with privacy laws	☐	☐
	f) Not a priority for the enterprise	☐	☐
	g) Insufficient quality of the big data source(s)	☐	☐
	h) Big data analysis is not useful for the enterprise	☐	☐
	i) Other factors	☐	☐
	Questions E6 and E7 are presented to respondents who answered 'Yes' at least once in E1 or E3.		
E6.	**During 2019, did your enterprise sell (access to) any of its own big data? (**E.g. big data from your enterprise's smart devices or sensors, big data about your enterprise's customers.)	**Yes** ☐	**No** ☐
E7.	**During 2019, did your enterprise purchase (access to) any big data?** (E.g. big data from other enterprise's smart devices or sensors, big data about other enterprise's customers.)	**Yes** ☐	**No** ☐

	MODULE F: ICT specialists and skills		
F1.	**Does your enterprise employ ICT specialists?** ICT specialists are employees for whom **ICT is the main job**. For example, to develop, operate or maintain ICT systems or applications.	**Yes** ☐	**No** ☐
F2.	**Did your enterprise provide any type of training to develop ICT related skills of the persons employed, during 2019?**	**Yes**	**No**
	a) Training for ICT specialists Tick No if your enterprise didn't employ ICT specialists during 2019	☐	☐
	b) Training for other persons employed	☐	☐
F3.	**Did your enterprise recruit or try to recruit ICT specialists, during 2019?**	**Yes** ☐	**No** ☐ **→ Go to F6**
F4.	**During 2019, did your enterprise have vacancies for ICT specialists that were difficult to fill?**	**Yes** ☐	**No** ☐ **→ Go to F6**
F5.	**Did your enterprise have any of the following difficulties to recruit ICT specialists during 2019?**	**Yes**	**No**
	a) Lack of applications	☐	☐
	b) Applicants' lack of relevant ICT related qualifications from education and/or training;	☐	☐
	c) Applicants' lack of relevant work experience	☐	☐
	d) Applicants' salary expectations too high	☐	☐
F6.	**Who performed your enterprise's ICT functions in 2019?** (e.g. maintenance of ICT infrastructure; support for office software; development or support of business management software/systems and/or web solutions; security and data protection)	**Yes**	**No**
	a) own employees (including those employed by parent or affiliate enterprises)	☐	☐
	b) external suppliers	☐	☐

Module G: Internet of Things

(Scope: enterprises with access to the internet, i.e. if A1>0)

The **Internet of Things (IoT)** refers to interconnected devices or systems, often called "smart" devices or systems. They collect and exchange data and can be monitored or remotely controlled via the Internet.

Examples of usage are:

a) smart thermostats, smart lamps or smart meters;
b) Radio Frequency Identification (RFID) or Internet Protocol (IP) tags applied or incorporated into a product or an object in order to track them;
c) sensors for tracking the movement or maintenance needs of vehicles monitored over the Internet.

		Yes	No
G1.	**Does your enterprise use interconnected devices or systems that can be monitored or remotely controlled via the Internet (Internet of Things)?** Please exclude the usage of computers, smartphones, printers	☐	☐ **→ Go to H1**
G2.	**Does your enterprise use any of the following interconnected devices or systems that can be monitored or remotely controlled via the Internet (Internet of Things)?**	**Yes**	**No**
	a) Smart meters, smart lamps, smart thermostats to optimize energy consumption in enterprise's premises (warehouses, production sites, distribution sites)	☐	☐
	b) Sensors, RFID or IP tags* or Internet-controlled cameras to improve customer service, monitor customers' activities or offer them a personalised shopping experience (targeted and relevant discounts, selfcheckout)	☐	☐
	c) Movement or maintenance sensors to track the movement of vehicles or products, to offer condition-based maintenance of vehicles	☐	☐
	d) Sensors or RFID tags to monitor or automate production processes, to manage logistics, to track the movement of products	☐	☐
	e) Other Internet of Things devices or systems	☐	☐

Module H: Use of 3D printing

Use of 3D printing aka additive layer manufacturing refers to the use of special printers either by the enterprise itself or the use of 3D printing services provided by other enterprises for the creation of threedimensional physical objects using digital technology.

		Yes	No
H1.	**During 2019, did your enterprise use 3D printing:**		
	a) using your enterprise's 3D printers? Include use of rented or leased 3D printers	☐	☐
	b) using printing services provided by other enterprises?	☐	☐

The next question should be answered if either H1 a) or H1 b) are answered "Yes". If both H1 a) and b) are answered "No" the respondent should be routed to I1.

		Yes	No
H2.	**During 2019, did your enterprise use 3D printing for any of the following:**		
	a) Prototypes or models for sale.	☐	☐
	b) Prototypes or models for internal use.	☐	☐
	c) Goods for sale excluding prototypes or models. (e.g. moulds, tools, parts of goods, semi-finished goods, etc.)	☐	☐
	d) Goods to be used in your enterprise's production process excluding prototypes or models. (e.g. moulds, tools, parts of goods, semi-finished goods, etc.)	☐	☐

Module I: Use of robotics

An **industrial robot** is an automatically controlled, reprogrammable, multipurpose manipulator programmable in three or more axes, which may be either fixed in place or mobile for use. Most existing industrial robots are based on the robot arm with a solid base and a series of links and joints with an end effector that carries out the task.

A **service robot** is a machine that has a degree of autonomy that enables it to operate in complex and dynamic environment that may require interaction with persons, objects or other devices, excluding its use in industrial automation applications. They are designed to fit their tasks, working in the air (e.g. as a drone), under water, or on land, using wheels or legs to achieve mobility with arms and end effectors to physically interact and are often used in inspection and maintenance tasks.

Software robots (computer programs) and 3D printers are out of the scope of the following questions.

		Yes	No
I1.	**Does your enterprise use any of the following types of robots?**		
	a) Industrial robots (e.g. robotic welding, laser cutting, spray painting, etc.) (Please see the definition of industrial robots)	☐	☐
	b) Service robots (e.g. used for surveillance, cleaning, transportation, etc.) (Please see the definition of service robots)	☐	☐
	If I1 b) = "Yes" then go to I2 else X1		
I2.	**Does your enterprise use service robots for any of the following?** (Please see the definition of service robots when considering the relevant tasks mentioned below)	**Yes**	**No**
	a) Surveillance, security or inspection tasks (e.g. use of autonomous airborne drones, etc.)	☐	☐
	b) Transportation of people or goods (e.g. use of automated guided vehicle, etc.)	☐	☐
	c) Cleaning or waste disposal tasks	☐	☐
	d) Warehouse management systems (e.g. palletising, handling goods, etc.)	☐	☐
	e) Assembly works performed by service robots	☐	☐
	f) Robotic store clerk tasks	☐	☐
	g) Construction works or damage repair tasks	☐	☐

MODULE X: Background information	
X1. Main economic activity of the enterprise, during 2019 (description)	……..…… ……..…… ……..…… ……..……
X2. Average number of persons employed, during 2019	⌊ ⌋⌊ ⌋⌊ ⌋⌊ ⌋
X3. Total turnover (in value terms, excluding VAT), for 2019	**€** ⌊ ⌋⌊ ⌋⌊ ⌋⌊ ⌋⌊ ⌋⌊ ⌋⌊ ⌋⌊ ⌋⌊ ⌋

MODULE J: General Information	
J1.	**If you have any comments about the survey, please write down below:**
	....
J2.	**Name of the person who answered the questionnaire:**
	Position in the enterprise:
	Telephone:
	Fax:
	E-mail:
J3.	**Name of the person who completed the questionnaire:**
	Time needed to fill out this questionnaire:
	Signature:
	Date:

TO BE COMPLETED BY THE ENUMERATOR:

J4.	**Completion of the questionnaire:** a) The questionnaire is completed…… 1 b) The enterprise has closed…… 2 c) The enterprise can not be located…… 3 d) The enterprise refuses to cooperate…… 4 e) The enterprise was closed during the collection of the data…… 5 f) Merged with another enterprise…… 6 g) Other reasons for no completion …… 7 Please specify: …… …… ……

FOR OFFICIAL USE ONLY

J5.	**Name of the person who checked the questionnaire:**

GLOSSARY

1	**3D printing (Additive Layer Manufacturing - ALM)**	Additive Layer Manufacturing (ALM) and 3D printing are equivalent terms for the same process. The latter is the popular term widely known while the former describes more precisely the process of joining materials to make physical objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing methodologies such as CNC machining or milling (e.g. lathe) that uses a rotating milling cutter to remove material from a solid block of material.
2	**3G, 3rd Generation 4G, 4th Generation**	3G or 3rd Generation, is a family of standards for mobile telecommunications (W-CDMA, CDMA2000, etc.) defined by the International Telecommunication Union (ITU). 3G devices allow simultaneous use of speech and data services and higher data transmission rates. Cellular mobile services were initially offered using analogue radio technologies and these were considered as the first generation systems (1G). 2G technology replaced analogue radio networks with digital ones (2G networks) in the 1990's. 4G is the fourth generation of cellular wireless standards. It is a successor of the 3G and 2G families of standards. The ITU-R organization specified the International Mobile Telecommunications Advanced requirements for 4G standards, setting peak speed requirements for 4G service at 100 Mbit/s for high mobility communication (such as from trains and cars) and 1 Gbit/s for low mobility communication (such as pedestrians and stationary users). Source: http://en.wikipedia.org/wiki/; http://www.itu.int
3	**App(s)**	A mobile app, short for mobile application or just app, is application software designed for a specific purpose (e.g. entertainment, shopping, etc.), downloaded and used on computers depending on their operating system. (e.g. portable devices such as tablets, Smartphones, etc.) Further information: http://en.wikipedia.org/wiki/Mobile_app; http://www.techopedia.com/definition/2953/mobile-application-mobile-app
4	**Business process**	A business process or business method is a collection of related, structured activities or tasks that produce a specific service or product (serve a particular goal) for a particular customer or customers. Business processes can be of three types: Management processes (e.g. corporate governance, strategic management), Operational processes (e.g. purchasing, manufacturing, marketing and sales etc) and Supporting processes (e.g. accounting, recruitment, technical support etc). Source: http://en.wikipedia.org/wiki/Business_process
5	**Chatbots or Virtual agent**	A chatbot or virtual agent is a computer generated, animated, artificial intelligence virtual character that serves as an online customer service representative.
6	**Counterfeiting**	A counterfeit is an imitation, usually one that is made with the intent of fraudulently passing it off as genuine. Counterfeit products are often produced with the intent to take advantage of the established worth of the imitated product. The word counterfeit frequently describes both the forgeries of currency and documents, as well as the imitations of products or goods (e.g. clothing, software, pharmaceuticals, jeans, watches, electronics, etc.). Source: http://en.wikipedia.org/wiki/Counterfeiting
7	**CRM**	Customer Relationship Management (CRM) is a management methodology which places the customer at the centre of the business activity, based in an intensive use of information technologies to collect, integrate, process and analyse information related to the customers. One can distinguish between: 1. Operational CRM – Integration of the front office business processes that are in contact with the customer. 2. Analytical CRM – Analysis, through data mining, of the information available in the enterprise on its customers. This aims to gather in depth knowledge of the customer and how to answer to its needs.

8	**DSL**	Digital Subscriber Line (DSL) is a family of technologies that provides digital data transmission over the wires of a local telephone network. DSL is widely understood to mean Asymmetric Digital Subscriber Line (ADSL), the most commonly installed technical varieties of DSL. DSL service is delivered simultaneously with regular telephone on the same telephone line as it uses a higher frequency band that is separated by filtering. Source: http://en.wikipedia.org/wiki/DSL
9	**EDI, EDI-type**	Electronic Data Interchange (EDI) refers to the structured transmission of data or documents between organizations or enterprises by electronic means. It also refers specifically to a family of standards (EDI-type) and EDI-type messages suitable for automated processing. Source: http://en.wikipedia.org/wiki/Electronic_Data_Interchange
10	**EDI e-Commerce**	Orders initiated with EDI. EDI (electronic data interchange) is an e-business tool for exchanging different kinds of business messages. EDI is here used as a generic term for sending or receiving business information in an agreed format suitable for automated processing (e.g. EDIFACT, XML, etc.) and without the individual message being manually typed. “EDI e-Commerce” is limited to EDI messages placing an order. Source: OECD, DSTI/ICCP/IIS(2009)5/FINAL
11	**E-invoice**	Electronic invoices comprises payment information exchanged between business parties – enterprises, public authorities - involved in commercial transactions, transmitted via the internet or other electronic means. A structured eInvoice is an invoice where all data are in digital format suitable for automated processing. A distinctive feature of a structured eInvoice is automation: a structured eInvoice will be transferred automatically in intercompany invoicing from the invoice issuer's or service provider’s system directly into the recipient's financial or other application. The eInvoice data could be structured according to the XML, EDI or other similar format. Unstructured invoices in an electronic form are not suitable for automated processing (e.g. emails, e-mail attachment as pdf, images in TIF, JPEG or other format)
12	**Electronic commerce (e-Commerce)**	An e-Commerce transaction is the sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders. The goods or services are ordered by those methods, but the payment and the ultimate delivery of the goods or services do not have to be conducted online. An e-Commerce transaction can be between enterprises, households, individuals, governments, and other public or private organisations. E-Commerce comprises orders made in Web pages or apps, extranet or EDI and excludes orders made by telephone calls, facsimile, or manually typed e-mail. The type is defined by the method of making the order. Source: OECD, DSTI/ICCP/IIS(2009)5/FINAL

13 **E-mail** Electronic transmission of messages, including text and attachments, from one computer to another located within or outside of the organisation. This includes electronic mail by Internet or other computer networks.

14 **ERP**

Enterprise Resource Planning (ERP) consists of one or of a set of software applications that integrate information and processes across the several business functions of the enterprise. Typically ERP integrates planning, procurement, sales, marketing, customer relationship, finance and human resources.

ERP software can be customised or package software. These latter are single-vendor, enterprise wide, software packages, but they are built in a modular way allowing enterprises to customise the system to their specific activity implementing only some of those modules.

ERP systems typically have the following characteristics:

1. are designed for client server environment (traditional or web-based);
2. integrate the majority of a business's processes;
3. process a large majority of an organization's transactions;
4. use enterprise-wide database that stores each piece of data only once;
5. allow access to the data in real time.

15 **Extranet** A closed network that uses Internet protocols to securely share enterprise's information with suppliers, vendors, customers or other businesses partners. It can take the form of a secure extension of an Intranet that allows external users to access some parts of the enterprise's Intranet. It can also be a private part of the enterprise's website, where business partners can navigate after being authenticated in a login page.

16 **Internet** The Internet is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP) to serve billions of users worldwide. It is a network of networks that consists of millions of private, public, academic, business, and government networks of local to global scope that are linked by a broad array of electronic and optical networking technologies. The Internet carries a vast array of information resources and services, most notably the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support electronic mail.
Source: http://en.wikipedia.org/wiki/Internet
Relates to Internet Protocol based networks: www, Extranet over the Internet, EDI over the Internet, Internet-enabled mobile phones.

17 **Internet of Things (IoT)** The Internet of Things (IoT) refers to interconnected devices or systems, often called "smart" devices or "smart" systems. They collect and exchange data and can be monitored or remotely controlled via the Internet, through software on any kind of computers, smartphones or through interfaces like wall-mounted controls.

18	**Marketplace(s) (e-commerce marketplaces)**	The term "e-commerce marketplaces" refers to websites or apps used by several enterprises for trading products e.g. Booking, eBay, Amazon, Amazon Business, Alibaba, Rakuten, etc.). E-commerce marketplaces are different from e-commerce platforms. The latter provide scalable, self-made online solutions for business that would like to set up their own e-commerce website.
19	**Machine learning (incl. deep learning)**	Machine learning (e.g. deep learning) involves 'training' a computer model to better perform an automated task, e.g. pattern recognition.
20	**Natural language generation (NLG)**	Natural language generation is the ability for a computer program to convert data into natural language representation.
21	**Natural language processing (NLP)**	Natural language processing is the ability for a computer program to understand human language as it is spoken.
22	**Office (automation) software**	Office (automation) software is a generic type of software comprising (grouped together) usually a word processing package, a spreadsheet, presentations' software etc.
23	**Online payment**	An online payment is an integrated ordering-payment transaction
24	**Robots - Robotics**	According to their intended application, robots may be industrial or service robots. An industrial robot is an automatically controlled, reprogrammable, multipurpose manipulator programmable in three or more axes, which may be either fixed in place or mobile for use in industrial automation applications. A service robot is a machine that has a degree of autonomy and is able to operate in complex and dynamic environment that may require interaction with persons, objects or other devices, excluding its use in industrial automation applications.
25	**Sales via website (web sales)**	A part of the e-Commerce activities, sales via website (web application) are orders made in an online store or filled in and sent by an electronic form on the www or extranet. Web sales are distinguished from EDI sales. In particular, the type of e-Commerce transaction is defined by the method of making the order. This approach should mitigate the interpretation problems where both types, EDI and Web, are used in the process. An example is a situation where an order is made by the customer through a web application but the information is transmitted to the seller as an EDI-message. Here the type of selling application is however web; EDI is only a business application to transmit information about the sale. Web sales can be done by mobile phones using an Internet-browser. Source: OECD. DSTI/ICCP/IIS(2009)5/FINAL

26 **Social Media**

In the context of the ICT usage survey, the central point of the social media is to establish and maintain social relationships within and around the enterprise. From that aspect we refer to the use of social media (as applications based on Internet technology or communication platforms) and the use of Web 2.0 technologies and tools for connecting, conversing and creating content online, with customers, suppliers, or other partners, or within the enterprise. It is not simply the use of Web 2.0 platform (although it is the enabling technology) but the use of social media implies the development of new forms of collaboration and information management within the enterprises as well as helping employees, customers and suppliers to collaborate, to innovate, to share, and to organize knowledge and experiences.

The following are the main social media communication platforms and tools for enterprises:

Social networks or websites are applications based on Internet technologies that enable users to connect by creating personal information profiles, share interest and/or activities, share ideas, invite others to have access to their profile and create communities of people with common interests.

Blogs: A blog is a website or a part of a website, that is updated frequently, either owned by individuals, interest groups of individuals or corporate (in the current context it is the blog of the enterprise and not other blogs to which employees contribute). An update (called an entry or a post) is usually quite short and readers can respond, share, comment or link to the entry online. Blogs can be used either within an enterprise (corporate blog) or for communicating with customers, business partners or other organisations.

Content communities offer the possibility of sharing media content between users. Photo and video services / Podcasting: A podcast (or non-streamed webcast) is a series of digital media files (either audio or video in various file format e.g. .aiff, .wav, .midi etc for the former and .mov, .avi etc for the latter) that are released episodically. The mode of delivery differentiates podcasting from other means of accessing media files over the Internet, such as direct download, or streamed webcasting. Presentation sharing websites offer the possibility to share presentations, documents and professional videos over the Internet (share publicly or privately among colleagues, clients, intranets, networks etc). These websites offer the possibility to upload, update and access presentations and/or documents. Very often, presentation sharing websites are linked to blogs and other social networking services or websites.

Microblogging refers to the posting of very short updates about oneself. It is in contrast to long-form blogging, where there are usually at least a few hundred words. Microblog posts usually involve a few hundred characters or less. For example, in the context of microblogging services Tweets (Twitter) are text-based posts of up to 140 characters displayed on the user's profile page.

Wiki: A wiki is a website that allows the creation and editing of any number of interlinked web pages via a web browser using a simplified markup language or a WYSIWYG text editor. Wikis are typically powered by wiki software and are often used collaboratively by multiple users. Examples include community websites, corporate intranets, and knowledge management systems.

27	**Speech recognition**	Speech recognition is the ability of a machine or program to identify words and phrases in spoken language and convert them to a machine-readable format.
28	**UBL**	Universal Business Language (UBL) is a library of standard electronic XML business documents such as purchase orders and invoices. UBL was developed by an OASIS Technical Committee with participation from a variety of industry data standards organizations. UBL is designed to plug directly into existing business, legal, auditing, and records management practices. It is designed to eliminate the re-keying of data in existing fax- and paper-based business correspondence and provide an entry point into electronic commerce for small and medium-sized businesses. Source: http://en.wikipedia.org/wiki/Universal_Business_Language
29	**Web e-Commerce**	Web (e-commerce) sales are sales made via an online store (web shop), via web forms on a website or extranet, or "apps" regardless of how the web is accessed (computer, laptop, mobile phone etc.) Source: OECD, DSTI/ICCP/IIS(2009)5/FINAL
30	**Web form**	A webform on a web page allows a user to enter data that is sent to a server for processing. Webforms resemble paper forms because Internet users fill out the forms using checkboxes, radio buttons, or text fields. For example, webforms can be used to enter shipping or credit card data to order a product or can be used to retrieve data. Source: http://en.wikipedia.org/wiki/Webform
31	**Website**	Location on the World Wide Web identified by a Web address. Collection of Web files on a particular subject that includes a beginning file called a home page. Information is encoded with specific languages (Hypertext mark-up language (HTML), XML, Java) readable with a Web browser, like Netscape's Navigator or Microsoft's Internet Explorer.
32	**Wireless access**	The use of wireless technologies such as radio-frequency, infrared, microwave, or other types of electromagnetic or acoustic waves, for the last internal link between users devices (such as computers, printers, etc) and a LAN backbone line(s) within the enterprise's working premises. It includes mainly Wi-fi and Bluetooth technologies.
33	**xDSL**	Digital Subscriber Line. DSL technologies are designed to increase bandwidth available over standard copper telephone wires. Includes IDSL, HDSL, SDSL, ADSL, RADSL, VDSL, DSL-Lite.
34	**XML**	The Extensible Markup Language is a markup language for documents containing structured information. Structured information contains both content (words, pictures, etc.) and some indication of what role that content plays (for example, content in a section heading has a different meaning from content in a footnote, which means something different than content in a figure caption or content in a database table, etc.). Almost all documents have some structure. A markup language is a mechanism to identify structures in a document. The XML specification defines a standard way to add markup to documents. Source: http://www.xml.com/