



Recent developments in the EU survey on ICT usage and e-commerce in enterprises

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Outline of the presentation

- Background – Community survey on ICT usage and e-commerce in enterprises
- Recent developments in the EU ICT ENT survey
 - Artificial Intelligence (AI)
 - Internet of Things (IoT)
 - Cloud computing (CC)
 - Covid-19 impact
 - ICT security
 - Use of robotics
 - ICT environmental impact
 - Big Data – under revision

Background – Survey design process

- Annual revisions of the questionnaire and the annual implementing regulation:
 - Policy needs
 - Technology developments
 - Constant quality improvements
 - Cooperation with EU MS and the users
 - Users consultation + 2 Working Groups + 2 Task Force meetings
- Goal: harmonisation across EU Member States
- Balance between relevance and keeping the time series
- Burden limitation (73 questions according to the EBS regulation)
- Data available at the end of the survey year

Community survey on ICT usage and e-commerce in enterprises – scope

Economic activity: Enterprises classified in the following categories of NACE Rev. 2:

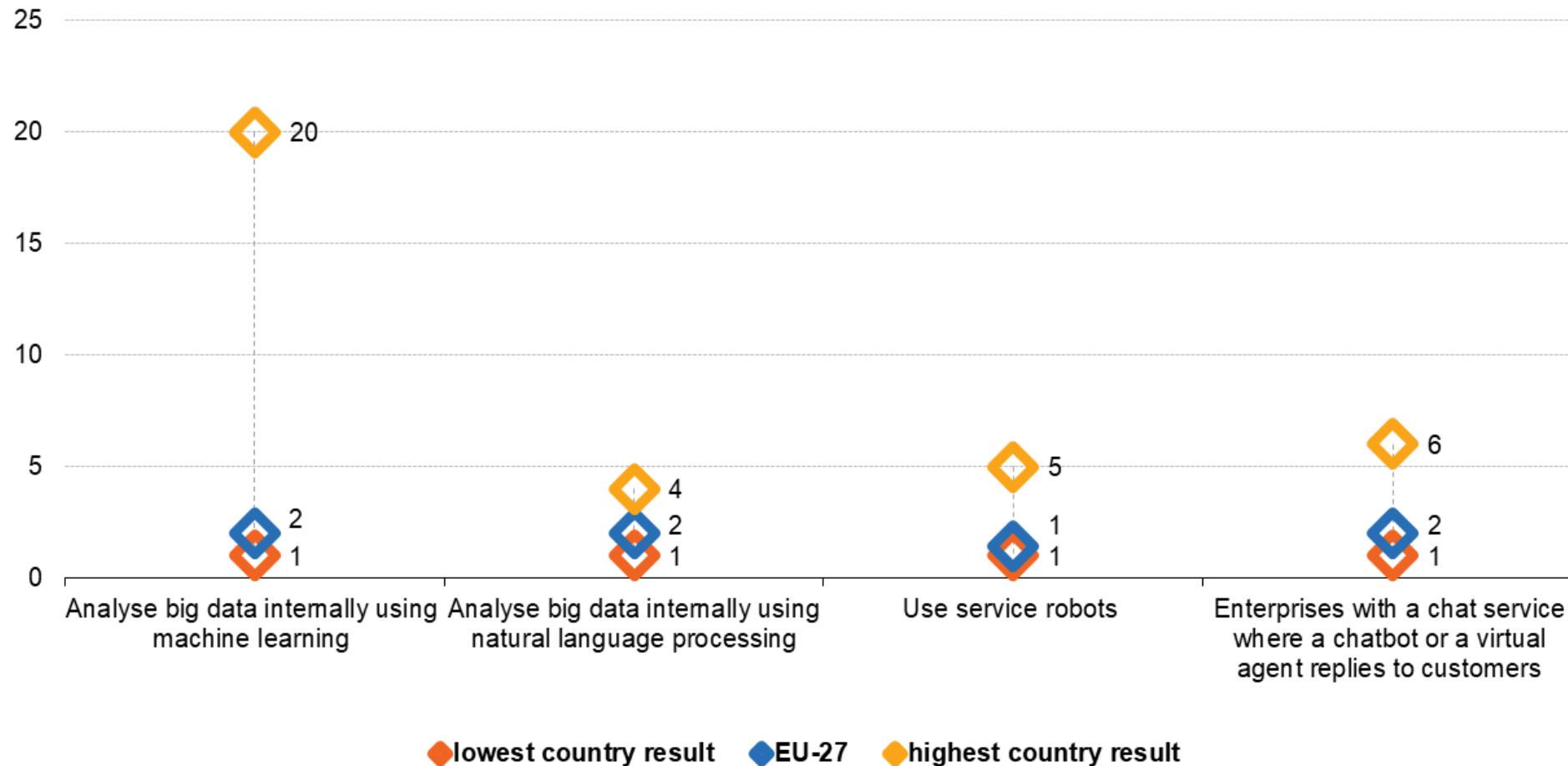
- Section C – “Manufacturing”;
- Section D – “Electricity, gas, steam and air conditioning supply”;
- Section E – “Water supply, sewerage, waste management and remediation activities”;
- Section F – “Construction”;
- Section G – “Wholesale and retail trade; repair of motor vehicles and motorcycles”;
- Section H – “Transportation and storage”;
- Section I – “Accommodation and food service activities”;
- Section J – “Information and communication”;
- Section L – “Real estate activities”;
- Section M – “Professional, scientific and technical activities”;
- Section N – “Administrative and support service activities”;
- Group 95.1 – “Repair of computers and communication equipment”

Enterprise size: Enterprises with 10 or more employees or self-employed persons.

Optional: enterprises with number of employees or self-employed persons between 0 and 9.

AI technologies uptake in EU-27 still low in 2020

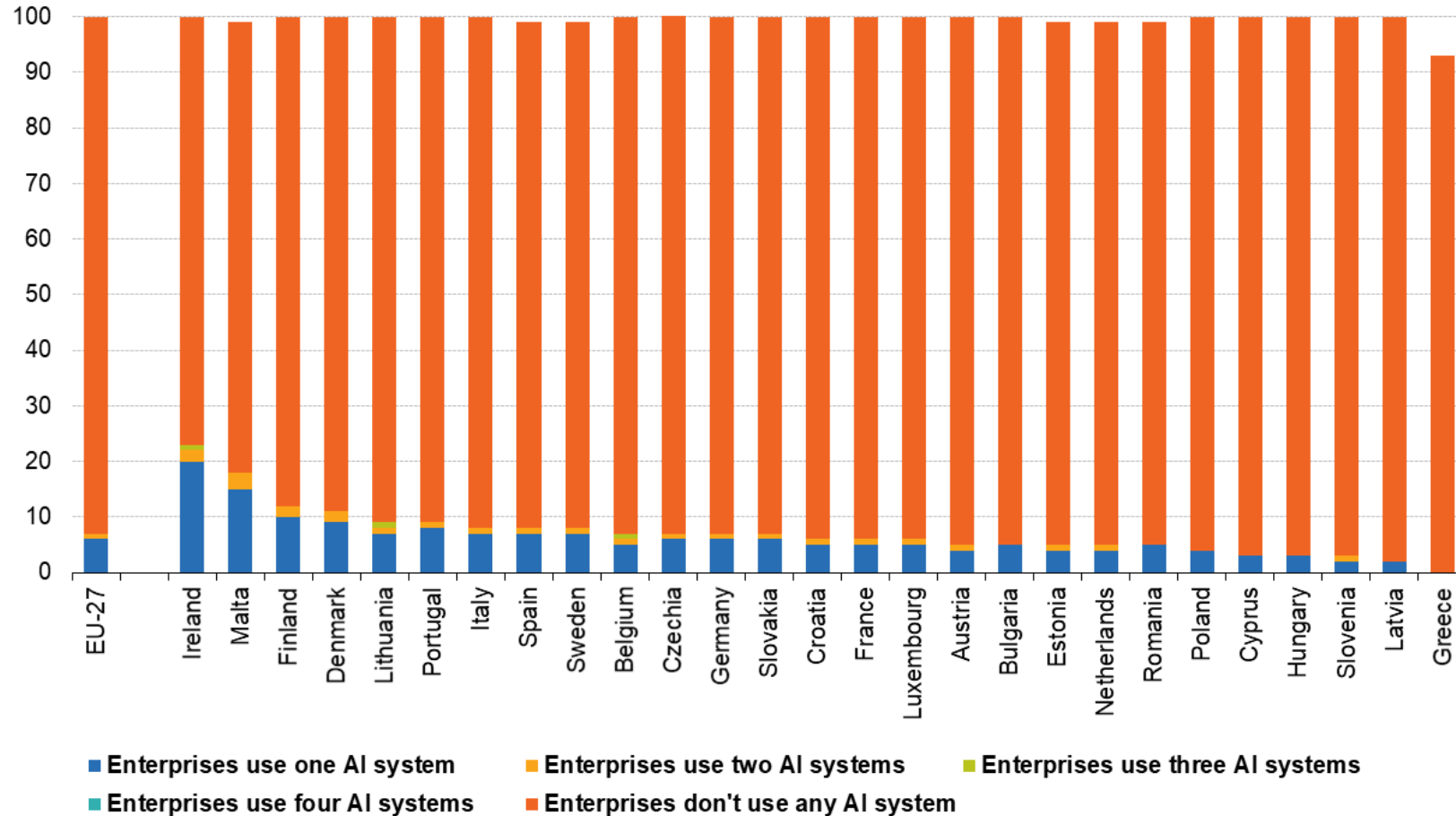
AI uptake, EU-27, 2020 (% enterprises)



Source: Eurostat (online data code: isoc_eb_ai)

AI index in EU-27 in 2020

AI Index, EU-27, 2020
(% enterprises)



Note: The results do not sum up to 100% due to figures with low reliability for some countries

Source: Eurostat (online data code: isoc_eb_ai)

AI in the 2021 EU ICT ENT survey

- Dedicated module:
 - Use of AI technologies by enterprises (by type of technology) – *filter question*
 - Use of AI by purpose (for marketing or sales, production processes, organisation or business administration processes, management of enterprises, logistics, ICT security, human resources management or recruiting)
 - Source of AI used (developed by own employees, commercial modified by own employees, open-source modified by own employees, commercial ready to use, external providers contracted to develop or modify)
 - Reasons for not using AI – *for non-users*

IoT in the 2021 EU ICT ENT survey

- Use of interconnected devices or systems that can be monitored or remotely controlled via the internet (IoT) – *filter question*
- Use of IoT by purpose (for energy consumption management, premises' security, production processes, logistics management, condition-based maintenance, customer service, other purposes)

CC in the 2021 EU ICT ENT survey

- The module was revised – more types of cloud services were included to cover more examples of the service models (SaaS, PaaS, IaaS)

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.) (Filter question)	Yes <input type="checkbox"/>	No <input type="checkbox"/> -> 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 (as a cloud computing service)	<input type="checkbox"/>	<input type="checkbox"/>
b) Office software (e.g. word processors, spreadsheets etc.) (as a cloud computing service)	<input type="checkbox"/>	<input type="checkbox"/>
c) Finance or accounting software applications (as a cloud computing service)	<input type="checkbox"/>	<input type="checkbox"/>
d) Enterprise Resource Planning (ERP) software applications (as a cloud computing service)	<input type="checkbox"/>	<input type="checkbox"/>
e) Customer Relationship Management (CRM) software applications (as a cloud computing service)	<input type="checkbox"/>	<input type="checkbox"/>
f) Security software applications (e.g. antivirus program, network access control) (as a cloud computing service)	<input type="checkbox"/>	<input type="checkbox"/>
g) Hosting the enterprise's database(s) (as a cloud computing service)	<input type="checkbox"/>	<input type="checkbox"/>
h) Storage of files (as a cloud computing service)	<input type="checkbox"/>	<input type="checkbox"/>
i) Computing power to run the enterprise's own software (as a cloud computing service)	<input type="checkbox"/>	<input type="checkbox"/>
j) Computing platform providing a hosted environment for application development, testing or deployment (e.g. reusable software modules, application programming interfaces (APIs)) (as a cloud computing service)	<input type="checkbox"/>	<input type="checkbox"/>

Covid-19 impact questions in the EU ICT ENT survey

- Not foreseen event, thus not foreseen questions in the implementing regulation defining the scope of the EU surveys in 2020 nor in 2021
- Common acknowledgement of the importance to measure the impact of the pandemic and the relevance of digitalisation in its context
- Important to capture the momentum (no time to wait for the next survey/regulation)

common EU approach to measuring the impact of Covid-19

- Harmonised module introduced in 2021 survey
- Voluntary (16 MS expressed interest, some NOs: due to national questions / too late as national questionnaire has been finalised / other)
- Results by the end of 2021 / beginning of 2022

Covid-19 impact questions in the EU ICT ENT survey

- Did enterprise increase the % of persons employed having remote access to the e-mail system of the enterprise, remote access to other ICT systems of the enterprise, number of remote meetings conducted – *filter question*
- Extent of Covid-19 impact on the above changes
- Did enterprise start or increase e-sales due to Covid-19 pandemic

ICT security in the 2022 EU ICT ENT survey

- ICT security measures applied on enterprise's ICT systems – *revised*
- Making persons employed aware of their obligations in ICT security related issues
- Having document(s) on measures, practices or procedures on ICT security
- Last definition or update of enterprise's document(s) on measures, practices or procedures on ICT security
- Experiencing any ICT related security incident leading to the following consequences
- Who carries out the ICT security related activities in the enterprise
- Having insurance against ICT security incidents

Robotics in the 2022 EU ICT ENT survey

- Use of robots by type (industrial, service robots)
- Number of industrial and service robots used by the enterprise - *new, optional*
- Reasons which influenced the decision to use robots by the enterprise – *new*

ICT & environment in the **2022** EU ICT ENT survey

- Measures applied to affect:
 - amount of paper used for printing and copying
 - energy consumption of the ICT equipment
- Consideration of environmental impact of ICT services, or ICT equipment when selecting them (e.g. energy consumption, etc.)
- Way of disposing of ICT equipment (e.g. computers, monitors, mobile phones) when it is no longer used

Other new questions in the **2022** EU ICT ENT survey

- Meetings via the internet
 - Conduct of remote meetings
 - Having CT security guidelines for conducting remote meetings via the internet
 - Having guidelines to favour remote meetings via internet instead of business travelling
- Remote access
 - Persons employed have remote access to enterprise's resources (e-mail, documents, business applications or software)
 - Number of persons employed having remote access to the e-mail system of the enterprise
 - Number of persons employed have remote access to the documents, business applications or software of the enterprise
 - Having any ICT security guidelines for remote access

Big Data in the **2023** EU ICT ENT survey

- The module is undergoing a revision



Thank you



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AI in the 2020 EU ICT ENT survey

- Fragmented approach – questions on selected AI-based technologies embedded in different modules of the survey
 - Chatbots
 - Big data analytics
 - Robotics

A9.	Does your enterprise have the following chat service for customer contacts?	Yes	No
	a) A chat service where a person replies to customers	<input type="checkbox"/>	<input type="checkbox"/>
	b) A chatbot or virtual agent replying to customers	<input type="checkbox"/>	<input type="checkbox"/>

AI in the 2020 EU ICT ENT survey

Module E: Big data analysis

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

E1.	During 2019, did your enterprise perform big data analysis on any of the following data sources? <i>(Please exclude big data analysis conducted by external service providers)</i>	Yes	No
a)	Data from smart devices or sensors (e.g. Machine to Machine -M2M- communications, digital sensors, Radio frequency identification tags RFID, etc.) <i>(in the context of big data)</i>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Geolocation data from the use of portable devices (e.g. portable devices using mobile telephone networks, wireless connections or GPS) <i>(in the context of big data)</i>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Data generated from social media (e.g. social networks, blogs, multimedia content sharing websites, etc.) <i>(in the context of big data)</i>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Other big data sources not specified above, e.g. stock index data, transaction data, other open web data.	<input type="checkbox"/>	<input type="checkbox"/>

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 (e.g. deep learning) <i>Machine learning (e.g. deep learning) involves 'training' a computer model to better perform an automated task, e.g. pattern recognition.</i>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Natural language processing, natural language generation or speech recognition <i>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.</i>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Other methods of big data analysis	<input type="checkbox"/>	<input type="checkbox"/>

AI in the 2020 EU ICT ENT survey

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.

I1.	Does your enterprise use any of the following types of robots? (Filter question)	Yes	No
	a) Industrial robots (e.g. robotic welding, laser cutting, spray painting, etc.) (Please see the definition of <u>industrial</u> robots)	<input type="checkbox"/>	<input type="checkbox"/>
	b) Service robots (e.g. used for surveillance, cleaning, transportation, etc.) (Please see the definition of <u>service</u> robots)	<input type="checkbox"/>	<input type="checkbox"/>

AI in the 2021 EU ICT ENT survey

- Dedicated module

Module F: Artificial Intelligence

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

Artificial intelligence refers to systems that use technologies such as: **text mining, computer vision, speech recognition, natural language generation, machine learning, deep learning** to gather and/or use data to predict, recommend or decide, with varying levels of autonomy, the best action to achieve specific goals.

Artificial intelligence systems **can be purely software based**, e.g.:

- chatbots and business virtual assistants based on natural language processing;
- face recognition systems based on computer vision or speech recognition systems;
- machine translation software;
- data analysis based on machine learning, etc.;

or **embedded in devices**, e.g.:

- autonomous robots for warehouse automation or production assembly works;
- autonomous drones for production surveillance or parcel handling, etc.

AI in the 2021 EU ICT ENT survey

Use of AI technologies,
filter question

F1. Does your enterprise use any of the following Artificial Intelligence technologies?	Yes	No
a) Technologies performing analysis of written language (text mining)	<input type="checkbox"/>	<input type="checkbox"/>
b) Technologies converting spoken language into machine-readable format (speech recognition)	<input type="checkbox"/>	<input type="checkbox"/>
c) Technologies generating written or spoken language (natural language generation)	<input type="checkbox"/>	<input type="checkbox"/>
d) Technologies identifying objects or persons based on images (image recognition, image processing)	<input type="checkbox"/>	<input type="checkbox"/>
e) Machine learning (e.g. deep learning) for data analysis	<input type="checkbox"/>	<input type="checkbox"/>
f) Technologies automating different workflows or assisting in decision making (Artificial Intelligence based software robotic process automation)	<input type="checkbox"/>	<input type="checkbox"/>
g) Technologies enabling physical movement of machines via autonomous decisions based on observation of surroundings (autonomous robots, self-driving vehicles, autonomous drones)	<input type="checkbox"/>	<input type="checkbox"/>

If F1 a) to g) = “No” then go to F4 (if optional included) else go to X1

AI in the 2021 EU ICT ENT survey

Purpose of AI use, for users

F2. Does your enterprise use Artificial Intelligence software or systems for any of the following purposes?	Yes	No
<p>a) for marketing or sales, e.g.:</p> <ul style="list-style-type: none"> • chatbots based on natural language processing for customer support, • customer profiling, price optimisation, personalised marketing offers, market analysis based on machine learning, etc. 	<input type="checkbox"/>	<input type="checkbox"/>
<p>b) for production processes, e.g.:</p> <ul style="list-style-type: none"> • predictive maintenance based on machine learning, • tools to classify products or find defects in products based on computer vision, • autonomous drones for production surveillance, security or inspection tasks, • assembly works performed by autonomous robots, etc. 	<input type="checkbox"/>	<input type="checkbox"/>
<p>c) for organisation of business administration processes, e.g.:</p> <ul style="list-style-type: none"> • business virtual assistants based on machine learning and/or natural language processing, • voice to text conversion based on speech recognition for document drafting, • automated planning or scheduling based on machine learning, • machine translation, etc. 	<input type="checkbox"/>	<input type="checkbox"/>
<p>d) for management of enterprises, e.g.:</p> <ul style="list-style-type: none"> • machine learning to analyse data and help make investment or other decisions, • sales or business forecasting based on machine learning, • risk assessment based on machine learning, etc. 	<input type="checkbox"/>	<input type="checkbox"/>
<p>e) for logistics, e.g.:</p> <ul style="list-style-type: none"> • autonomous robots for pick-and-pack solutions in warehouses, • route optimization based on machine learning, • autonomous robots for parcel shipping, tracing, distribution and sorting, • autonomous drones for parcel delivery, etc. 	<input type="checkbox"/>	<input type="checkbox"/>
<p>f) for ICT security, e.g.:</p> <ul style="list-style-type: none"> • face recognition based on computer vision for authentication of ICT users, • detection and prevention of cyber-attacks based on machine learning, etc. 	<input type="checkbox"/>	<input type="checkbox"/>
<p>g) for human resources management or recruiting, e.g.:</p> <ul style="list-style-type: none"> • candidates pre-selection screening, automation of recruiting based on machine learning, • employee profiling or performance analysis based on machine learning, • chatbots based on natural language processing for recruiting or supporting human resources management, etc. 	<input type="checkbox"/>	<input type="checkbox"/>

AI in the 2021 EU ICT ENT survey

Source of AI used, for
users

F3.	How did you enterprise acquire the Artificial Intelligence software or systems that it uses? <i>- Optional</i>	Yes	No
	a) They were developed by own employees (including those employed in parent or affiliate enterprise)	<input type="checkbox"/>	<input type="checkbox"/>
	b) Commercial software or systems were modified by own employees (including those employed in parent or affiliate enterprise)	<input type="checkbox"/>	<input type="checkbox"/>
	c) Open-source software or systems were modified by own employees (including those employed in parent or affiliate enterprise)	<input type="checkbox"/>	<input type="checkbox"/>
	d) Commercial software or systems ready to use were purchased (including examples where it was already incorporated in a purchased item or system)	<input type="checkbox"/>	<input type="checkbox"/>
	e) External providers were contracted to develop or modify them	<input type="checkbox"/>	<input type="checkbox"/>

AI in the 2021 EU ICT ENT survey

Reasons for not using AI,
for *non-users*

Questions F4 and F5 are presented only to respondents who answered 'No' to F1a)-g) i.e. enterprises that did not use any of the Artificial Intelligence technologies listed in question F1.

F4.	Has your enterprise ever considered using any of the Artificial Intelligence technologies listed in question F1? – Optional <i>(Filter question)</i>	Yes <input type="checkbox"/>	No <input type="checkbox"/> -> go to X1
F5.	What are the reasons for your enterprise not to use any of the Artificial Intelligence technologies listed in question F1? – Optional	Yes	No
	a) The costs seem too high	<input type="checkbox"/>	<input type="checkbox"/>
	b) There is a lack of relevant expertise in the enterprise	<input type="checkbox"/>	<input type="checkbox"/>
	c) Incompatibility with existing equipment, software or systems	<input type="checkbox"/>	<input type="checkbox"/>
	d) Difficulties with availability or quality of the necessary data	<input type="checkbox"/>	<input type="checkbox"/>
	e) Concerns regarding violation of data protection and privacy	<input type="checkbox"/>	<input type="checkbox"/>
	f) Lack of clarity about the legal consequences (e.g. liability in case of damage caused by the use of Artificial Intelligence)	<input type="checkbox"/>	<input type="checkbox"/>
	g) Ethical considerations	<input type="checkbox"/>	<input type="checkbox"/>
	h) Artificial Intelligence technologies are not useful for the enterprise	<input type="checkbox"/>	<input type="checkbox"/>

IoT in the 2021 EU ICT ENT survey

Module E: 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 are:

- "smart"-meters, -thermostats, -lamps (lights), -alarm systems, -smoke detectors, -door locks,
- -cameras;
- sensors, RFID tags connected to a base station that allows them to be managed via the internet.

Please exclude plain detection and sensors (e.g. motion, sound, temperature, smoke, etc.) and RFID tags that **cannot** be monitored or remotely controlled via the internet).

Internet of Things may include various types of network connections via WAN, WiFi, LAN, Bluetooth, ZigBee, Virtual Private Networks (VPN) etc.

IoT in the 2021 EU ICT ENT survey

Use of IoT,
filter question

<p>E1. Does your enterprise use interconnected devices or systems that can be monitored or remotely controlled via the internet (Internet of Things)? (Filter question)</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/> ->go to F1
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IoT in the 2021 EU ICT ENT survey

Purpose of IoT use

E2. Does your enterprise use interconnected devices or systems that can be monitored or remotely controlled via the internet (Internet of Things) for any of the following?	Yes	No
a) for energy consumption management (e.g. "smart"-meters, -thermostats, -lamps (lights))	<input type="checkbox"/>	<input type="checkbox"/>
b) for premises' security (e.g. "smart" -alarm systems, -smoke detectors, -door locks, -security cameras)	<input type="checkbox"/>	<input type="checkbox"/>
c) for production processes (e.g. sensors or RFID tags that are monitored/controlled via the internet and used to monitor or automate the process)	<input type="checkbox"/>	<input type="checkbox"/>
d) for logistics management (e.g. sensors monitored/controlled via the internet for tracking products or vehicles in warehouse management)	<input type="checkbox"/>	<input type="checkbox"/>
e) for condition-based maintenance (e.g. sensors monitored/controlled via the internet to monitor maintenance needs of machines or vehicles)	<input type="checkbox"/>	<input type="checkbox"/>
f) for customer service (e.g. "smart" cameras or sensors monitored/controlled via the internet to monitor customers' activities or offer them a personalised shopping experience)	<input type="checkbox"/>	<input type="checkbox"/>
g) for other purposes	<input type="checkbox"/>	<input type="checkbox"/>

Covid-19 impact questions in the 2021 survey

filter question

1. <u>During 2020, did the enterprise:</u> (via computers or mobile phones)	Yes	No	Not applicable
a) increase the percentage of persons employed having remote access to the e-mail system of the enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) increase the percentage of persons employed having remote access the ICT systems of the enterprise other than e-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) increase the number of remote meetings conducted by the enterprise (e.g. via Skype, Zoom, MS Teams, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Covid-19 impact questions in the 2021 survey

Extent of Covid-19 impact

2. To what degree were these changes due to the covid-19 pandemic? (via computers or mobile phones)	Fully	Partly	Not at all
<i>(If 1a)=yes</i> a) in the remote access to the e-mail system of the enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>(If 1b) =yes</i> b) in the remote access the ICT systems of the enterprise other than e-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>(If 1c) =yes</i> c) in number of remote meetings conducted by the enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Covid-19 impact questions in the 2021 survey

Covid-19 impact

3.	Yes	No
During 2020, <u>due to the Covid-19 pandemic</u> did your enterprise start or increased efforts to sell goods or services via internet (via website or apps, marketplaces or EDI-type messages)?	<input type="checkbox"/>	<input type="checkbox"/>

ICT security in the 2022 EU ICT ENT survey

D1. Does your enterprise apply any of the following ICT security measures on its ICT systems?	Yes	No
a) authentication via strong password (e.g. minimum length, use of numbers and special characters, changed periodically, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
b) authentication via biometric methods used to access the enterprise's ICT system (e.g. authentication based on fingerprints, voice, face)	<input type="checkbox"/>	<input type="checkbox"/>
c) authentication based on a combination of at least two authentication mechanisms (i.e. combination of e.g. user-defined password, one-time password (OTP), code generated via a security token or received via a smartphone, biometric method (e.g. based on fingerprints, voice, face))	<input type="checkbox"/>	<input type="checkbox"/>
d) Encryption of data, documents or e-mails	<input type="checkbox"/>	<input type="checkbox"/>
e) Data backup to a separate location (including backup to the cloud)	<input type="checkbox"/>	<input type="checkbox"/>
f) Network access control (management of user rights in enterprise's network)	<input type="checkbox"/>	<input type="checkbox"/>
g) VPN (Virtual Private Network extends a private network across a public network to enable secure exchange of data over public network)	<input type="checkbox"/>	<input type="checkbox"/>
h) ICT security monitoring system that allows to detect suspicious activity in the ICT systems and alerts the enterprise about it, other than standalone anti-virus software	<input type="checkbox"/>	<input type="checkbox"/>
i) Maintaining log files that enable analysis after ICT security incidents	<input type="checkbox"/>	<input type="checkbox"/>
j) ICT risk assessment, i.e. periodical assessment of probability and consequences of ICT security incidents	<input type="checkbox"/>	<input type="checkbox"/>
k) ICT security tests (e.g. performing penetration tests, testing security alert system, review of security measures, testing of backup systems)	<input type="checkbox"/>	<input type="checkbox"/>

ICT security in the 2022 EU ICT ENT survey

D2.	Does your enterprise make persons employed aware of their obligations in ICT security related issues in the following ways?	Yes	No
	a) Voluntary training or internally available information (e.g. information on the intranet)	<input type="checkbox"/>	<input type="checkbox"/>
	b) Compulsory training courses or viewing compulsory material	<input type="checkbox"/>	<input type="checkbox"/>
	c) By contract (e.g. contract of employment)	<input type="checkbox"/>	<input type="checkbox"/>

ICT security in the 2022 EU ICT ENT survey

<p>D3. Does your enterprise have document(s) on measures, practices or procedures on ICT security? (Filter question) (Documents on ICT security and confidentiality of data cover employee training in ICT use, ICT security measures, the evaluation of ICT security measures, plans for updating ICT security documents, etc.)</p>	<p>Yes <input type="checkbox"/></p>	<p>No <input type="checkbox"/> ->go to D5</p>
<p>D4. When were your enterprise's document(s) on measures, practices or procedures on ICT security, defined or most recently reviewed? (Documents on ICT security and confidentiality of data cover employee training in ICT use, ICT security measures, the evaluation of ICT security measures, plans for updating ICT security documents, etc.) <i>(Tick only one)</i></p>		
<p>a) within the last 12 months</p>	<p><input type="checkbox"/></p>	
<p>b) more than 12 months and up to 24 months ago</p>	<p><input type="checkbox"/></p>	
<p>c) more than 24 months ago</p>	<p><input type="checkbox"/></p>	

ICT security in the 2022 EU ICT ENT survey

D5. During 2021, did your enterprise experience any ICT related security incident leading to the following consequences?	Yes	No
a) Unavailability of ICT services due to hardware or software failures	<input type="checkbox"/>	<input type="checkbox"/>
b) Unavailability of ICT services due to attack from outside, e.g. ransomware attacks, Denial of Service attacks	<input type="checkbox"/>	<input type="checkbox"/>
c) Destruction or corruption of data due to hardware or software failures	<input type="checkbox"/>	<input type="checkbox"/>
d) Destruction or corruption of data due to infection of malicious software or unauthorised intrusion	<input type="checkbox"/>	<input type="checkbox"/>
e) Disclosure of confidential data due to intrusion, pharming, phishing attack, intentional actions by own employees	<input type="checkbox"/>	<input type="checkbox"/>
f) Disclosure of confidential data due to unintentional actions by own employees	<input type="checkbox"/>	<input type="checkbox"/>

ICT security in the 2022 EU ICT ENT survey

D6.	Who carries out the ICT security related activities (e.g. security testing, ICT training on security, resolving ICT security incidents) in your enterprise? Exclude upgrades of pre-packaged software	Yes	No
	a) own employees (incl. those employed in parent or affiliate enterprises)	<input type="checkbox"/>	<input type="checkbox"/>
	b) external suppliers	<input type="checkbox"/>	<input type="checkbox"/>

D7.	Does your enterprise have insurance against ICT security incidents?	Yes	No
		<input type="checkbox"/>	<input type="checkbox"/>

Robotics in the 2022 EU ICT ENT survey

E1. Does your enterprise use any of the following types of robots? (Filter question)	Yes	No
<p>a) Industrial robots (e.g. robotic welding, laser cutting, spray painting, etc.) <i>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 of industrial robots are based on a robotic arm and a series of links and joints with an end effector that carries out the task.</i> <u>Do not include CNC-machines, 3D printers and devices that are fully controlled by an operator.</u></p>	<input type="checkbox"/>	<input type="checkbox"/>
<p>b) Service robots (e.g. used for surveillance, cleaning, transportation, etc.) <i>A service robot has a degree of autonomy and can operate in complex and dynamic environments that may require interaction with persons, objects or other devices. They use wheels or legs to achieve mobility and are often used in inspection, transport or maintenance tasks.</i> <i>Examples are: autonomous guided vehicles, inspection and maintenance robots, cleaning robots, etc.</i> <u>Do not include software robots.</u></p>	<input type="checkbox"/>	<input type="checkbox"/>

Robotics in the 2022 EU ICT ENT survey

<p>E2. Please indicate the number of <u>industrial and service robots</u> used by the enterprise</p> <p>- Optional</p> <p>Please count each individual robot separately in cases where they are integrated into a production line (e.g. one robotic arm counts as one robot).</p> <p><i>If you cannot provide the exact number, an approximation will suffice</i></p>	<div data-bbox="1337 575 1623 725" style="border: 1px solid black; padding: 10px; text-align: center;">(Number)</div>
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Robotics in the 2022 EU ICT ENT survey

E3. Please indicate if the following reasons influenced the decision to use robots in your enterprise:	Yes	No
a) High cost of labour	<input type="checkbox"/>	<input type="checkbox"/>
b) Difficulties to recruit personnel	<input type="checkbox"/>	<input type="checkbox"/>
c) To enhance safety at work	<input type="checkbox"/>	<input type="checkbox"/>
d) To ensure high precision or standardized quality of processes and/or goods and services produced	<input type="checkbox"/>	<input type="checkbox"/>
e) To expand the range of goods produced or services provided by the enterprise	<input type="checkbox"/>	<input type="checkbox"/>
f) Tax or other government incentives	<input type="checkbox"/>	<input type="checkbox"/>

ICT & environment in the 2022 EU ICT ENT survey

F1.	Does your enterprise apply any measures to affect the following?	Yes	No
	a) Amount of paper used for printing and copying	<input type="checkbox"/>	<input type="checkbox"/>
	b) Energy consumption of the ICT equipment	<input type="checkbox"/>	<input type="checkbox"/>

F2.	Does your enterprise consider environmental impact of ICT services, or ICT equipment when selecting them (e.g. energy consumption, etc.)?	Yes	No
		<input type="checkbox"/>	<input type="checkbox"/>

ICT & environment in the 2022 EU ICT ENT survey

F3. What does your enterprise do with ICT equipment (e.g. computers, monitors, mobile phones) when it is no longer used?	Yes	No
a) It is disposed of in electronic waste collection/recycling (incl. leaving it to the retailer to dispose of)	<input type="checkbox"/>	<input type="checkbox"/>
b) The ICT equipment is kept in the enterprise (e.g. to be used as spare parts, fear of sensitive information being disclosed)	<input type="checkbox"/>	<input type="checkbox"/>
c) It is sold, returned to a leasing enterprise, or donated	<input type="checkbox"/>	<input type="checkbox"/>

Remote meetings in the 2022 EU ICT ENT survey

A5. Does your enterprise conduct remote meetings (via e.g. Skype, Zoom, MS Teams, WebEx, etc.)?	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/> -> go to A8

A6. Does your enterprise have any ICT security guidelines for conducting remote meetings via the internet (e.g. password requirement, end-to-end encryption)?	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>

A7. Does your enterprise have guidelines to favour remote meetings via internet instead of business travelling?	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>

Remote access in the 2022 EU ICT ENT survey

A8. Do any of the persons employed have remote access to the following? (via computers or portable devices such as smartphones)	Yes	No
a) E-mail system of the enterprise	<input type="checkbox"/>	<input type="checkbox"/>
b) Documents of the enterprise (e.g. files, spreadsheets, presentations, charts, photos)	<input type="checkbox"/>	<input type="checkbox"/>
c) Business applications or software of the enterprise (e.g. access to accounting, sales, orders, CRM) <i>Please exclude applications used for internal communication, e.g. Skype, Teams, Yammer</i>	<input type="checkbox"/>	<input type="checkbox"/>

Remote access in the 2022 EU ICT ENT survey

If YES to A8a then go to A9

A9. How many persons employed have remote access to the e-mail system of the enterprise?

(via computers or portable devices such as smartphones)

If you can't provide this value,

please indicate the percentage of all persons employed who have remote access to the e-mail system of the enterprise

(Number)

□ □ □ %

Remote access in the 2022 EU ICT ENT survey

If YES to A8b or A8c then go to A10

A10. How many persons employed have remote access to the documents, business applications or software of the enterprise (e.g. files, spreadsheets, presentations, charts, photos, access to accounting, sales, orders, CRM)?
(via computers or portable devices such as smartphones)

(Number)

If you can't provide this value,

please indicate the percentage of all persons employed who have remote access to the documents, business applications or software of the enterprise

□ □ □ %

Remote access in the 2022 EU ICT ENT survey

A11. Does your enterprise have any ICT security guidelines for remote access? <i>(e.g. requirement to conduct password-secured remote meetings, prohibition of using of public Wi-Fi for work, use of VPN, requirements concerning privacy of data)</i>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
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