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Module 2

Digital Skills for Improving the Agricultural Business

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ICT for Education and Social Impact

MACEDONIAN ENTERPRISE DEVELOPMENT FOUNDATION

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Wissenschaftsinitiative Niederösterreich
Science Initiative Lower Austria

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Modules

1. Introduction to the Digitization in the Agriculture
2. Digital Skills for Improving the Agricultural Business
3. Managing the Agricultural Business in the Digital Economy
4. Building Economical Value Chain in Agriculture Using Digital Technologies
5. Financing the Digital Transformation of the Agricultural Business

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Do you know the capabilities of the desktop and mobile tools and, applications?

Are you in a position to choose the proper applications and tools for communicating with your partners?

Are you capable of searching information on the Web (Internet)?

Are you aware of the need for online safety and data privacy?

Are you aware of the technology available for digital farming?

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Learning Objectives of Module 2

After completing this module, you will:

- ✓ Understand the different types of digital devices and the importance of protecting them by taking protective measures
- ✓ Be able to search for information on the Web and browse in a safe way
- ✓ Be able to distinguish between personal data and understand the concepts of security and privacy
- ✓ Be able to advance collaboration skills through digital technologies and send/receive e-mails
- ✓ Become familiar with the term Advanced Digital Skills for farmers and know how to search for online courses on digital farming

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Unit 1

Digital Competences and Skills

Objectives

Upon completion of this Unit, you will:

- ✓ Understand and explain the concept of Digital Competence
- ✓ Be aware about the five (5) areas of Digital Competences
- ✓ Understand what digital skills the farmers need

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Digital Transformation

The emerging **Information and Communication Technologies** (ICT), based mainly on the Internet (Web 2.0) and mobile technologies, have changed the landscape of the everyday life, professional life and citizenship.

All aspects of life are under the process of **digital transformation.**

To be active in the digital environment, in addition to digital devices, equipment and infrastructure, **digital competences** are required, that is the ability to use and exploit the digital environment in an effective way.

Who Needs Digital Skills?

Anyone needs to be **digitally competent**, i.e., able to complete tasks in a digital environment, or in other words be equipped with **digital skills**.

Digital skills are applied in:

- **Daily life:** for communicating with the family members and friends, searching for important information, conducting online transactions, online learning, etc.
- **Professional domain:** to communicate with colleagues, business partners, clients, in a formal and informal way, search information, business online transactions, etc.
- **Citizenship:** to communicate with government services online, etc.

Digital Competence

"Digital competence involves the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and cyber security-related skills), intellectual property questions, problem solving and critical thinking."

Council Recommendation on Key Competences for Lifelong Learning, 22 May 2018, ST 9009 2018 INIT.

- **Competences are a combination of knowledge, skills and attitudes**, in other words, they are composed of concepts and facts (i.e., knowledge), descriptions of skills (e.g., the ability to carry out processes) and attitudes (e.g., a disposition, a mindset for action).
- Key competences are developed throughout life.

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Source: [1] DigComp 2.2: The Digital Competence Framework for Citizens. Link

Areas of Digital Competences (1)

According to the EU's DigComp 2.3 Framework, the key **areas of competences** and digital skills are five. Each area has several **competences**:

1. **Information and data literacy** - a set of skills needed to search, access and navigate between different types of digital content as files, websites, etc. (1.1). This also includes being able to compare different sources of information and understand which ones are reliable (1.2). The ability to store, manage and organize folders and different types of files is also part of this area of competence (1.3).

Area 1 - Information and data literacy

Competences:

- ✓ 1.1 Browsing, searching and filtering data, information and digital content
- ✓ 1.2 Evaluating data, information and digital content
- ✓ 1.3 Managing data, information and digital content

Source: [1] DigComp 2.2: The Digital Competence Framework for Citizens. Link

Areas of Digital Competences (2)

2. **Communication and collaboration** - a set of skills needed to use digital technologies in order to interact, communicate and collaborate with other people (2.1, 2.2 and 2.4). This also includes the opportunity to participate in society through the use of public and private digital services (2.3 and 2.5). The ability to manage your online identity and reputation is also part of this competency area (2.6).

Area 2 - Communication and collaboration

Competences:

- ✓ 2.1 Interacting through digital technologies
- ✓ 2.2 Sharing through digital technologies
- ✓ 2.3 Engaging in citizenship through digital technologies
- ✓ 2.4 Collaborating through digital technologies
- ✓ 2.5 Netiquette
- ✓ 2.6 Managing digital identity

Source: [1] DigComp 2.2: The Digital Competence Framework for Citizens. Link

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Areas of Digital Competences (3)

3. **Digital content creation** - a set of skills needed to create and edit various types of digital content, including text and multimedia files (3.1). This includes the skills needed to enhance and integrate different types of information and content together (3.2). The abilities to understand how copyright and licenses work (3.3) and how to develop instructions for a computer system (3.4) are also part of this area of competence.

Area 3 - Digital content creation

Competences:

- ✓ 3.1 Developing digital content
- ✓ 3.2 Integrating and re-elaborating digital content
- ✓ 3.3 Copyright and licenses
- ✓ 3.4 Programming

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Areas of Digital Competences (4)

4. **Safety** - the set of skills needed to protect devices, content (4.1), personal data and privacy while understanding the risks and threats of digital environments (4.2). This also includes skills needed to protect physical and mental health and digital literacy for social well-being and inclusion (4.3). Awareness of the environmental impact of the use of digital technologies is also part of this area of competence (4.3).

Area 4 - Safety

Competences:

- ✓ 4.1 Protecting devices
- ✓ 4.2 Protecting personal data and privacy
- ✓ 4.3 Protecting health and well-being

Areas of Digital Competences (5)

5. **Problem solving** - a set of skills for identifying needs and technical problems (5.1) and for selecting appropriate technological responses to solve them (5.2). This also includes the skills needed to use digital tools for process and product innovation (5.3). The abilities to understand which digital competences need to be improved and to keep up with digital progress are also part of this competence area (5.4).

Area 5 - Problem solving

Competences:

- ✓ 5.1 Solving technical problems
- ✓ 5.2 Identifying needs and technological responses
- ✓ 5.3 Creatively using digital technologies
- ✓ 5.4 Identifying digital competence gaps

Farmers and Digital Skills

- Farmers, as professionals, are not an exception, they also need to be digitally competent.
- Apart from the **basic digital skills** that apply to anyone, farmers, additionally, need to know how to exploit technology in the entire agricultural business cycle, from production, i.e., **digital farming**, to the promotion and sale of their agricultural products, i.e., **digital marketing**.
- In fact, there is an impressive list of competences and skills that farmers would need to effectively benefit from the digital transformation. Six skill areas (see Source EIP-AGRI Seminar) can be listed according to their place in the technology adoption process:

✓ Attitude and open-mindedness	✓ 'Bridging'
✓ Comprehensive management	✓ Digital literacy
✓ Communication and collaboration	✓ Advanced digital skills

Module 2 focuses on the "Digital literacy" skill area. Suggestions included in Source [2] have been considered by the authors.

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Source: [2] EIP-AGRI Seminar: New skills for digital farming. FINAL REPORT - JUNE 2020. Link

Cooperation and Collaboration

To be competent one needs a) knowledge, b) skills to apply them in the field, and c) equipment.

To acquire knowledge and skills, one must allocate time and money for training. The level of knowledge and training attained will vary based on the available resources and background.

- ✓ **Knowledge**
  - For what is needed?
  - To decide on the least costly way to meet the need.
- ✓ **Skills**
  - For executing the task by oneself, or
  - For obtaining external services, buying and operating equipment, sharing equipment with others, renting equipment and services.

Cooperative model:
Sharing knowledge and equipment -
choose the appropriate level of cooperation and collaboration with the others.

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Example: Buying, Renting, Sharing

- Requirement:

  Knowledge that a problem can be solved by using a drone.

- Purchasing a drone, piloting and using it. Risks:

  Find the right one (technical specifications) at the right price.

  Piloting requires training, licensing.

- Alternatives:

  First: Rent a drone as a service from a service provider.

  Second: Consult an exert, buying the drone as a group, piloting it by a licensed drone pilot, sharing the total cost (purchase, operation, maintenance).

In the Upcoming Chapters of Module 2 …

… we aim to provide **knowledge** about:

- The basic digital competences,
- An introduction to advanced digital competences and guides on where to find more information.

We develop key digital skills by first briefly introducing the key concepts and issues, suggest simple activities on carry out simple tasks, and build on these to explain some more complex concepts, such as security and privacy.

Unit 2

Digital Devices

Objectives

Upon completion of this Unit, you will:

- ✓ Know the different types of digital devices
- ✓ Be able to choose the right type of device for your need
- ✓ Know the basic steps you should take to protect your devices

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Digital Devices

A digital device is required to be active in the digital environment. There are many **different types** of digital devices available.

- **Each device has its advantages and disadvantages.**

Therefore, we will discuss, which device is useful for which specific activity and how we should protect it.

Personal Computer

- **Description:** A Personal Computer (PC), desktop or laptop, is an electronic device used for a variety of purposes, e.g., browsing the web, writing documents, playing video games, etc.
- **Useful for:** Advanced web research, writing long texts, writing e-mails.
- **Not useful for:** Doing some internet research or writing short texts while on the road.

Smartphone

- **Description:** A smartphone is a mobile phone with which you can do much more than just make phone calls. For example, smartphones can connect to the internet, and can take photos or videos. Therefore, it can also be considered as a small computer. The screen of a smartphone is a touchscreen.
- **Useful for**: Writing short messages, doing a little internet research, using social media like WhatsApp, Instagram, etc.
- **Not useful for:** Writing long texts or doing extensive internet research.

Tablet

- **Description:** A tablet is smaller than a computer or laptop but taller than a smartphone. It has a touch screen but, unlike a laptop, no keyboard.
- **Useful for:** Small research activities, downloading and reading books, gaming, watching videos, checking mail
- **Not useful for:** Writing long e-mails or other texts, large research activities.

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Security: Tips for Protecting Data and Devices

1. Use the **latest versions** of an operating system, install **antivirus** and firewall software and **check for updates** regularly.
2. Avoid downloading free software from unknown or untrusted websites. Download software only from well-known and trusted companies. Many free programs (applications) may deliver adware and spyware to a computer or mobile device.
3. Use a **strong password:**
   - Long,
   - A mix of characters,
   - Don’t use memorable keyboard paths (like qwerty), name or numbers on relatives' birthdays.

Unit 3

Search Information on the Web

Objectives

Upon completion of this Unit, you will know:

- ✓ How to find websites and information about them using search engines
- ✓ When a website is secure and safe to visit it

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Devices for Searching

- Searching information on the internet is possible with all the aforementioned devices, e.g., smartphone, tablet, PC.
- Once you have decided which device you want to use, there are a few different steps you should take into account, during your research.

Click here for some information !

Well, the correct phrase is „searching information on the **World Wide Web“**, instead of the Internet. See the next slide.

Step 1: Web-browsers

For searching for information on the Web, you need to open a web browser (*step 1*). Usually, a web browser is already available on your device.

Some of the most common web-browsers:

- Google Chrome,
- Mozilla Firefox,
- Microsoft Edge,
- Apple Safari,
- Opera.

Step 2: Find the Proper Websites

All the information on the Web are available on websites. So, the next step (**step 2**) is to connect to the appropriate website that contains the information you are looking for.

- To connect to a website, you need to know its domain name, e.g., agriskills40.com ;
- And the next questions are:

  "Which website(s) should I visit to find the information I am looking for?", and

  "How can I find the domain name of this/these website(s)?"

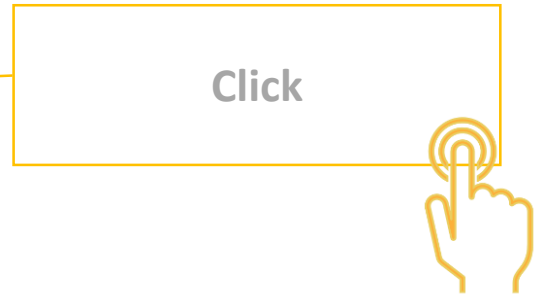
Websites

As a beginning, we have been somehow informed about a domain name, e.g.:

- read it somewhere,
- advised by someone,
- found it in another website with related content, or
- used a search engine to find the domain names of the website.

Concluding,

- if you already know the domain name, you may enter it directly into the browser and connect to the website;
- otherwise, use a **search engine** to find it.



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- if you already know the domain nam connect to the website;
- otherwise, use a **search engine** to find it.

A **search engine** is a service for finding websites. It collects available websites on the Web and associates them with several tags, which are keywords related to the website's main category of information.

Steps:

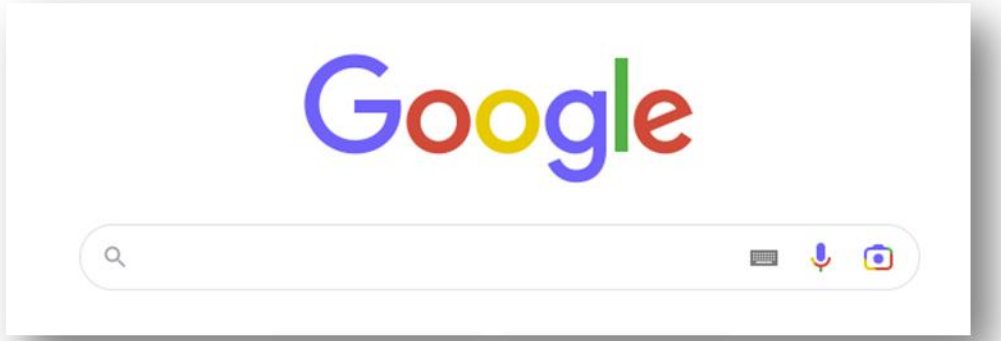
1. The user logs in via a browser to the search engine.
2. Enters the keywords
3. The search engine returns a list of websites related to the keywords
4. The user chooses to visit one or more websites

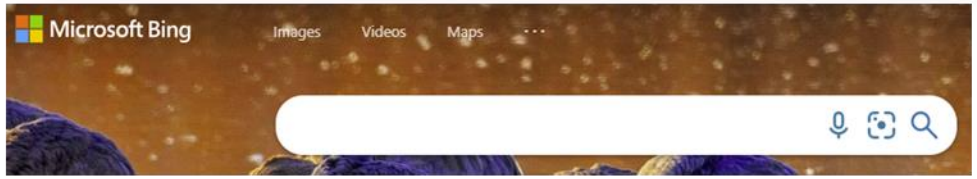
Search Engines

To search for information on the internet, you have to connect, with your browser, to one of the available search engines.

Some of the most popular search engines are the following:

- **Google.com**: You can differentiate your search through google between information, photos or you can use them for navigation.
- **Bing.com**: The structure and function are usually similar to Google, but the search results may be different.
- **Yahoo.com**: Quite similar to Bing.

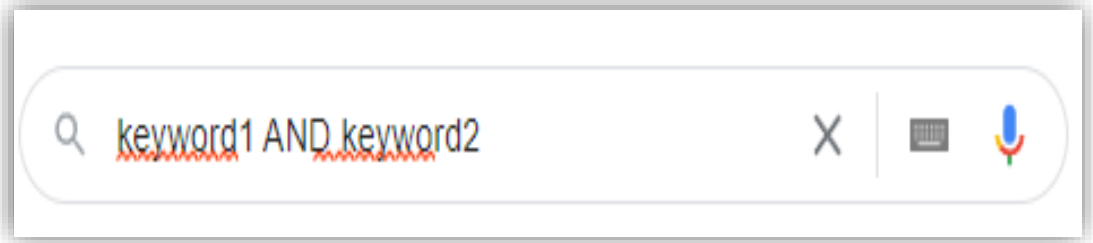




How Can I Find the Information I'm Interested In?

Things to consider when creating a search string:

1. Focus on relevant keywords, especially nouns.
2. Specific use of search operators:
   - AND: Linking two or more search terms;
   - OR: The search results contain one or the other, or all of the search terms;
   - Brackets: Brackets can be used to construct queries with the above search operators.



Activity: Search for Information about “Digital Farming”

1. *Open your browser and connect to one of the following search engines:*
   - *Yahoo.com*
   - *Bing.com*
   - *Google.com*
2. *Enter as keywords:* ***Digital Farming.***
3. *The search results are displayed as a list of links, accompanied by a title and a paragraph, divided into multiple pages.*
4. *View the results of the first page, then browse through the following pages of results. Did you find something interesting?*
5. *Hover your mouse over a link you are interested in, right-click, go to the “Open link in new tab” option and click on it.*
6. *In your browser, a new tab appears and contains the link page. Go to this tab and read the page.*
7. *Repeat it again with other keywords.*

Digital Farming

Is the Website Secure?

A **secure website** has a link in which:

- The **http**S protocol is used, “s” means secure.

Click here for more information about the https protocol

An **original website**, e.g., a bank website, has a link to which:

- The domain name includes its official name, or it is close to it;
- It is relatively short.

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Is the Website Secure?

A **secure website** has a link in which:

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An **original website**, e.g., a bank website, has a link to which:

- The domain name
- It is relatively sho

Click here for more information about the https protocol

Hypertext Transfer Protocol Secure (HTTPS) is an extension of the **Hypertext Transfer Protocol (HTTP).** It is used for secure communication over a computer network and is widely used on the Internet.

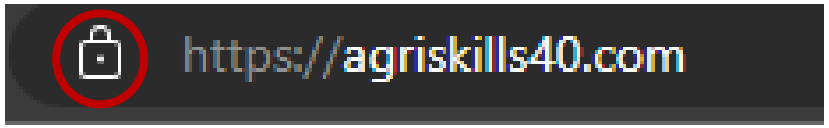
The **https** protocol ensures that

- data is encrypted during transmission over the Internet, and cannot be read by anyone (encryption)
- the receiver is actually the receiver and not someone pretending (authentication)

For more information visit https://en.wikipedia.org/wiki/HTTPS

How to Check if “https” is Used?

- The **https** is included in the link.
- When a browser is connected to a secure website, a **lock symbol** appears next to the link.
- This symbol indicates that the **website is secure**.



Insecure Websites or Links

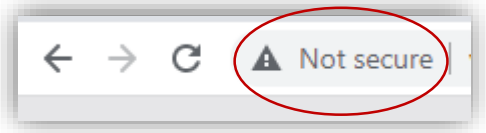
- **http** is included in the link.
- When a browser is connected to an insecure website, the following will appear:

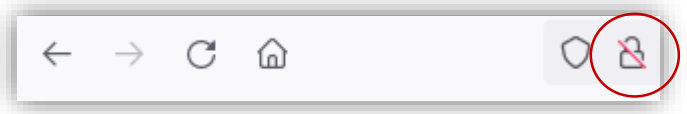
  … a **“lock with a red line” symbol**, or

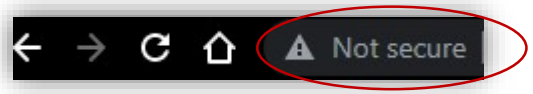
  … a **triangle with the attention sign**, and

  … **“Not secure”** message appears next to the link.

These symbols and messages indicate that the **website or link is not secure**.







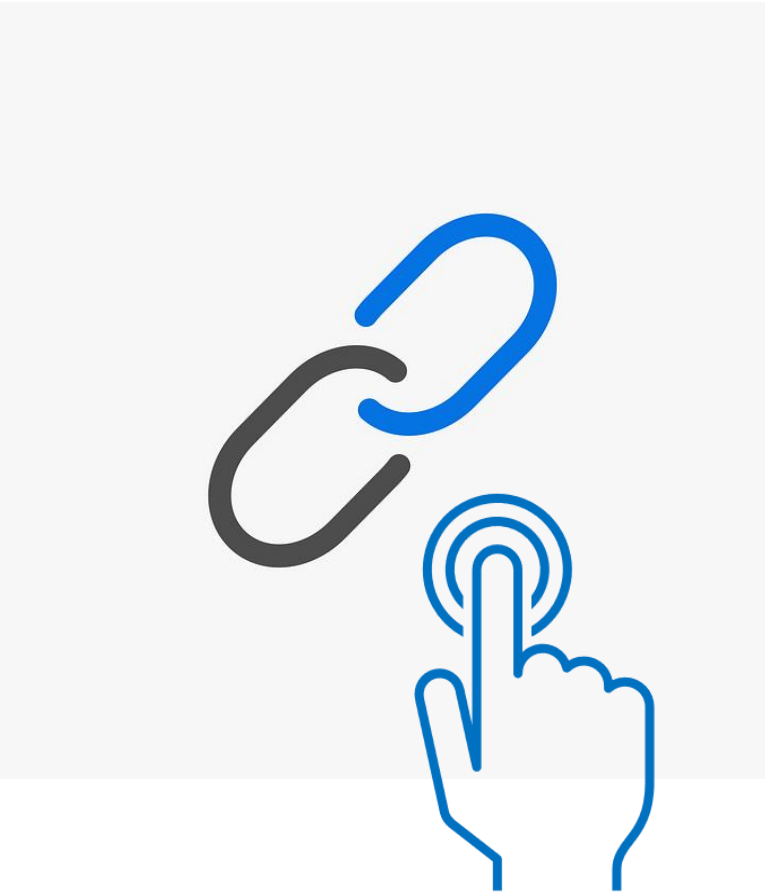
Is a Link Safe to Visit?

Case 1: If **https** is used in a link but the domain name is not close to the official name, then

- *the website could be a fake clone of the original* with the purpose of stealing your personal data.

Case 2: If **http** is used in a link, instead of **https**, but the domain name is fine, then

- the transmission of personal data over the Internet is **not secure**, so *you should not use this website* to submit personal data.



Activity: Is the link safe to visit?

Decide, if the link is safe to visit:

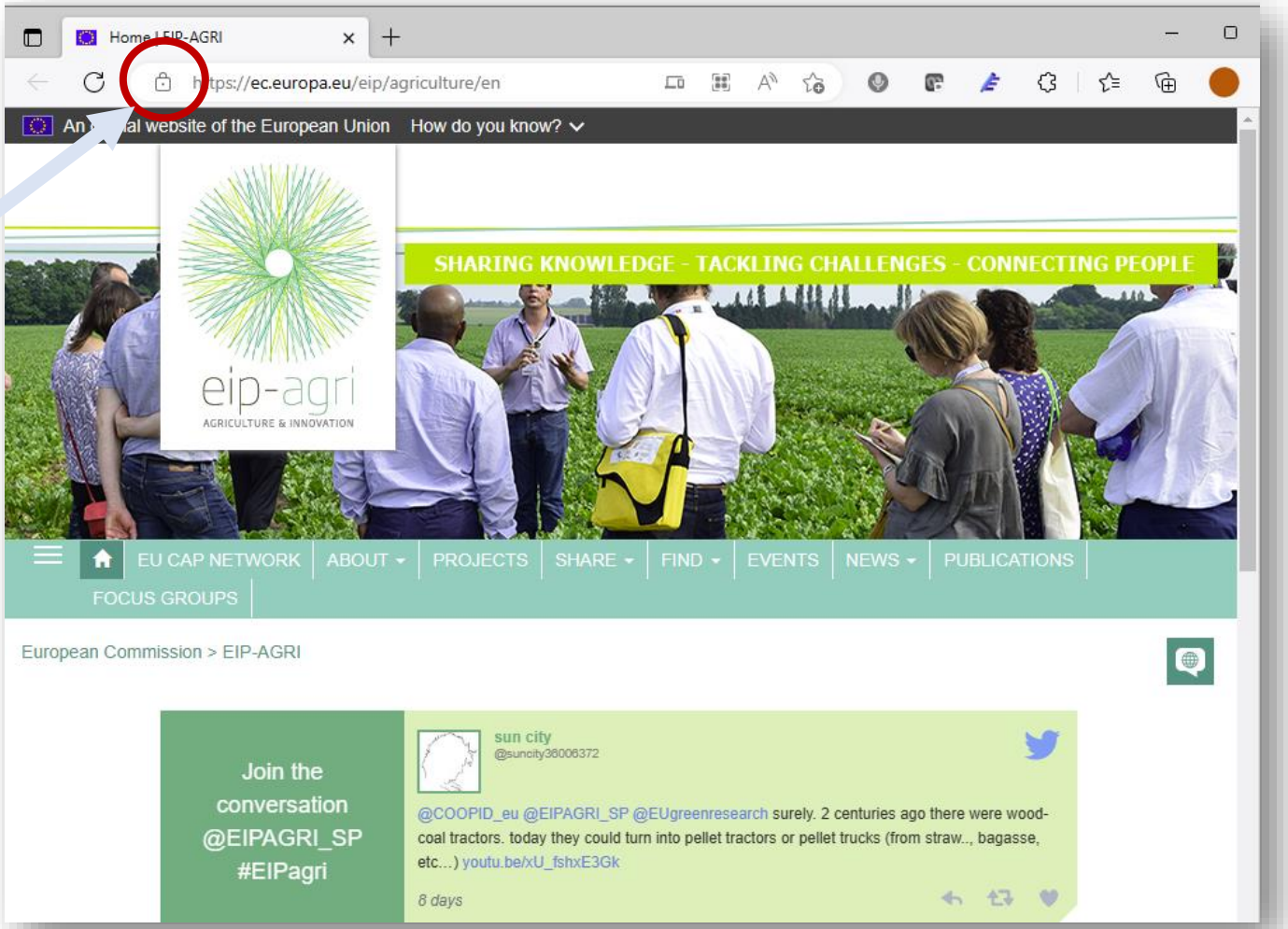
1. *Visit the link: https://ec.europa.eu/eip/agriculture/en*
2. *Is this link safe to visit?*
3. *Think about the reasons!*

Activity: Is the link safe to visit? (2)

Answer: Yes, the link is safe to visit.

Reasons:

- It uses the **https** protocol;
- The lock symbol appears in the browser;
- The domain name is not an unknown name or name with random characters but is the domain name of a well-known and trusted institution.



Unit 4

Introduction to Online Safety, Personal Data and Privacy

Objectives

Upon completion of this Unit, you will know:

- ✓ What are the personal data?
- ✓ The concepts of privacy and security
- ✓ What is e-mail spamming and phishing and how to react responsively?
- ✓ Criteria for deciding which links are safe to visit
- ✓ What is the General Data Protection Regulation (GDPR)?

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Online Safety

Being online exposes Internet users to **online security threats**. Once a user sends data over the Internet (video or voice call packets, chat, email or credit card number, websites) they have **no control over who can access the data**. Data passes through many servers, routers, and devices where any hacker, service provider or government agent can access and read it.

Therefore, it is of the utmost importance for internet users to take measures in the directions of:

- Protection of their **sensitive personal data;**
- Using online tools and services, e.g., data encryption, that **ensure the privacy and security** of their customers' data during the online communication with them.

What is Personal Data?

Personal data is any information that relates to **living, identified or identifiable individual**.

Different information, which together can lead to **the identification of a specific person**, also constitutes personal data.

Examples of Personal Data

Examples of personal data are as follows:

- Name and surname;
- Home address;
- Email address such as

  name.surname@company.com;
- Location data, for example the location data function on a mobile phone);
- Identification card number;
- Internet Protocol (IP) address;
- A cookie ID;
- The advertising identifier of your phone;
- Data held by a hospital or doctor, which could be a symbol that uniquely identifies a person.

What Personal Data is Considered Sensitive?

Sensitive personal data

The following personal data is considered '**sensitive**' and is subject to specific processing conditions:

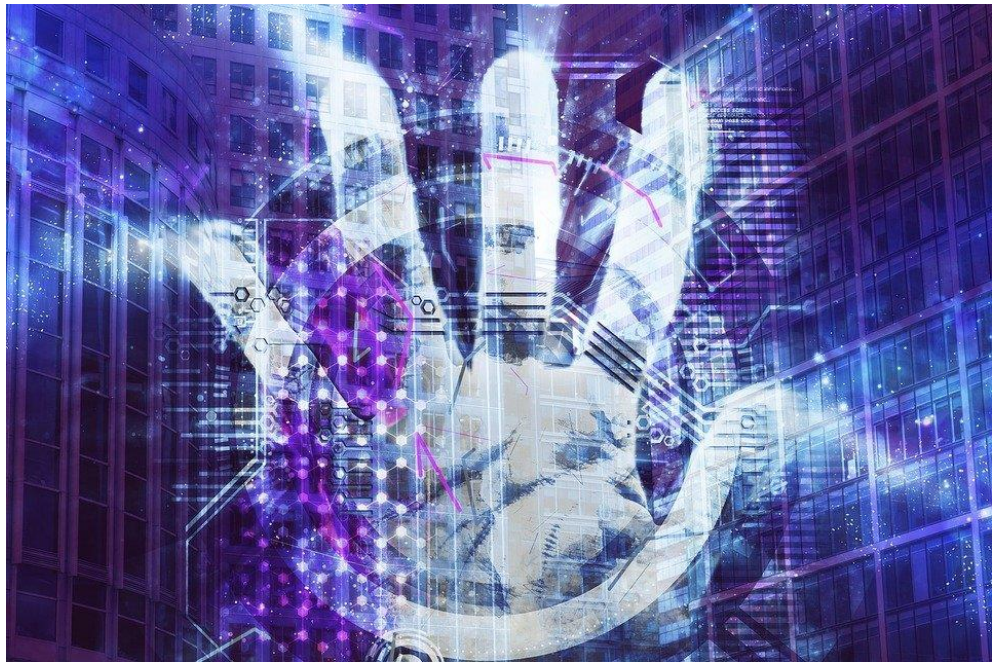
- personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs;
- photos, videos;
- trade-union membership;
- genetic data, biometric data processed solely for the identification of a human being;
- health-related data;
- data concerning a person's sex life or sexual orientation.

What is Privacy?

Privacy is about:

- How to **control our personal data,** and
- Determine **how they are used** by the remote parties who have received it, in secure.

Recall the **privacy policies** you're asked to read and agree to when you access a website or download a new smartphone app.



What is Security?

Security is about **how to secure, protect your personal data** from **unauthorized access** either on your device, on the remote web server or during communication over the internet.

We use **security controls** at the technical level to limit who can access the information. These controls are in place:

- On our devices (PC, tablet, mobile phone), i.e., apply operating system and software updates, use strong passwords;
- On the remote web server, i.e., use strong passwords;
- During data transmission over the Internet, i.e., use the secure protocol **https.**

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Security and Privacy

- Security is about **safeguarding of data**, whereas privacy is about **safeguarding the identity of users**.

  For example, hospital and clinic staff use secure systems to communicate with patients about their health, instead of sending information via personal email accounts. This type of data transmission is an example of security.

- On the other hand, privacy provision might limit patient health record access to **certain hospital staff members**, such as doctors, nurses, and medical assistants.

- **It is possible to have security without privacy**.

  For example, personal data may be transmitted and stored on a website securely, but the website may sell it

- **It impossible to have privacy without security.**

  For example, a hacker may have unauthorized access to your device, web server or transmitted data and steal your personal data

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Spam Emails and “Phishing”

You may have received annoying e-mails from an **unknown sender**, usually of a commercial nature.

Additionally, **emails can be dangerous because** they may contain links that lead to phishing websites or websites that host malware or include malware as file attachments.

So, **do not open the attached files or click on the link**. And in no case, provide personal information, bank account details or passwords.

This, is called **“phishing”:** criminals send official-looking emails in an attempt to get the user to reveal details that may be used for identity theft.

How to Identify Spam Emails?

An email is suspicious when one or more for the following occur:

- Grammar and spelling mistakes
- Mails in a foreign language
- The sender's name is missing
- Urgent need for action - especially in combination with a threat
- Request to enter personal data (e.g., PIN or TAN)
- Request to open a file
- Never received any e-mails from the bank or a customer so far

What To Do or Not To Do?

- ✓ Avoid opening attachments unless they have been checked by an anti-virus program.
- ✓ Remember to log out, especially when using a shared public computer.
- ✓ Delete all emails from unknown persons.
- ✓ Never reply to spam!
- ✓ Do not click on links contained in spam e-mails.

Activity: Is the link safe to visit?

Decide, if the link is safe to visit:

Suppose you receive an email from a bank, which prompts you to click on a link like the one below, and submit personal data, such as username, passwords, credit card details.

http://url5423.eka.de/ls/click?upn=V1OaWNMSPs2Lb0JqHpnyTLRlk2703ToIFpo2vd2MKt5gB6dYAUvw1B-2FnC6T5iVsCdbcug7l6pkTad-2FBfACSlC-2BKw-3D-3DhmuAs-OaWNMSPs2Lb0JqHpn-asDvdva

1. *Think and decide if this link is safe to visit.*
2. *Think about the reasons.*

Activity: Is the link safe to visit? (2)

The answer. *This link* is **not secure** for many reasons:

- It uses http instead of https.
- The domain name is not related to the bank's official name.
- The link is suspiciously long.
- The domain name of the link is different from the domain name of the senders' email address.
- A real bank will never ask you username, passwords, credit card details.

What is GDPR and Who Must Comply with IT?

What is GDPR?

- The **General Data Protection Regulation** is a European Union law that was implemented on May 25, 2018, and requires organizations to safeguard personal data and uphold the privacy rights of anyone in EU territory.

Who must comply with GDPR?

- Any organization that processes personal data of individuals in the EU must comply with the GDPR.
- "**Processing**" is a broad term that covers just about anything you can do with data: collection, storage, transmission, analysis, etc.
- "**Personal data**" is any information that relates to a person, such as names, email addresses, IP addresses, eye color, political beliefs, and etc.

Even if an organization is not connected to the EU itself but it processes personal data of people in the EU (ex. via tracking on its website), it must comply with GDPR. The GDPR is also not limited to for-profit companies.

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Activity: Visit and browse on the following websites.

- Home | EIP-AGRI (europa.eu)
- https://fastplatform.eu/
- https://www.smartagrihubs.eu/
- Home – euraknos
- https://enrd.ec.europa.eu/
  - Greece | The European Network for Rural Development (ENRD) (europa.eu)
  - Slovenia | The European Network for Rural Development (ENRD) (europa.eu)
  - Germany | The European Network for Rural Development (ENRD) (europa.eu)
  - Austria | The European Network for Rural Development (ENRD) (europa.eu)
- http://sfate.eu/
- https://aer.eu/upskilling-agri-food/

Unit 5

ICT Based Communication

Objectives

Upon completion of this Unit, you will

- ✓ Advance your collaboration skills through digital technologies,
- ✓ Know the different types of ICT-based communication such as synchronous (real-time), asynchronous, audio-visual and text-based communication,
- ✓ Know how to get e-mail account and send/receive e-mails.

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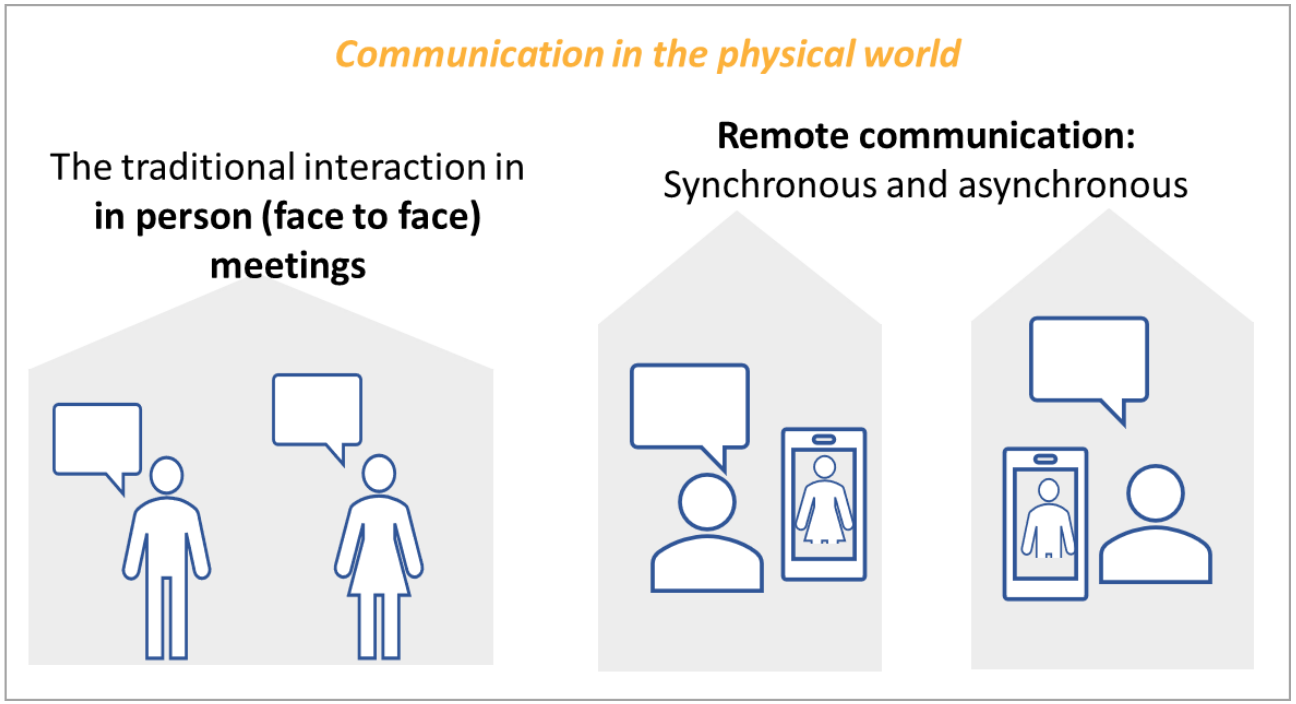
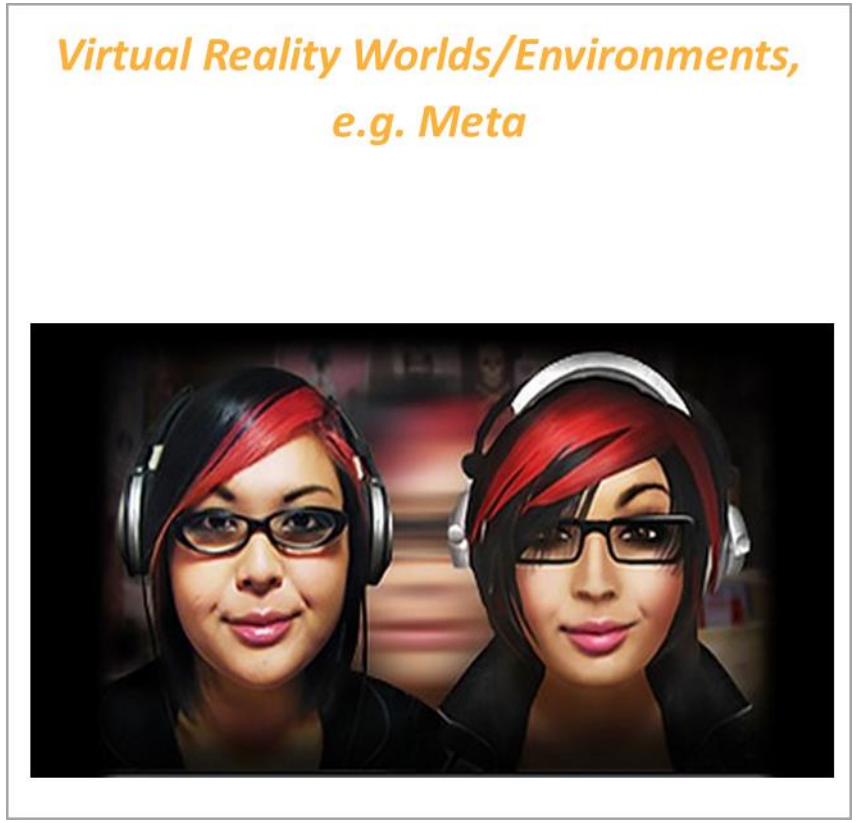
Classification of Interaction with a Person (Partner, Colleague, Client, etc.)

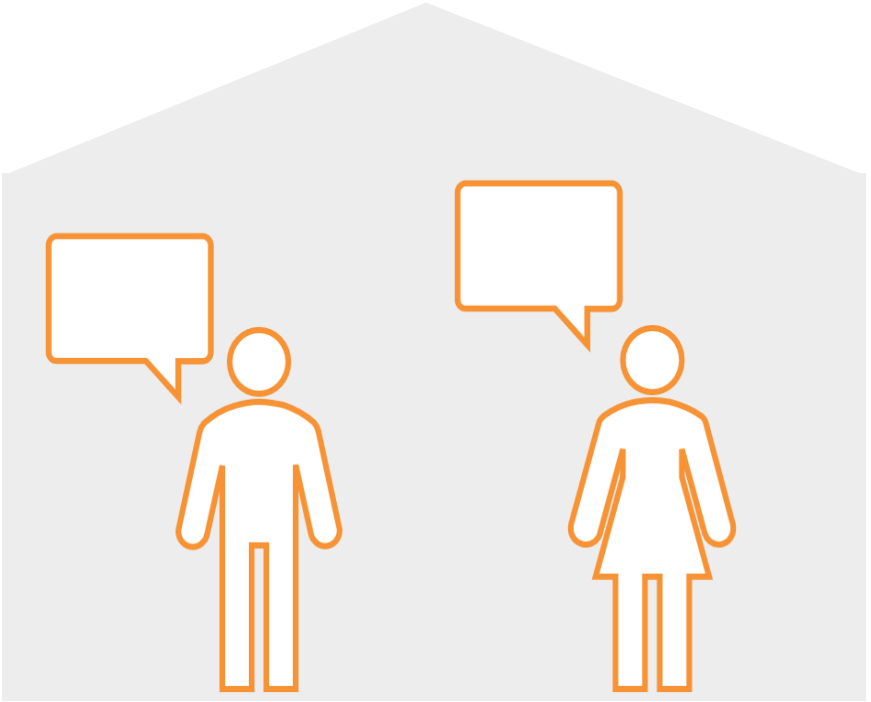
The enhanced interaction with a client through technology is categorized into two parts: a) communication in the **physical world** and b) communication in **virtual reality environment.** We are going to focus only to the physical word communication.





Face-to-Face Meetings

The traditional interaction is based on verbal **communication in a face-to-face meeting**, meaning that all participants are physically in the **same place**, at the **same time** and have visual and verbal communication.



Remote Communication

Emerging **Information and Communication Technologies** (ICT), based mainly on the Internet (Web 2.0) and mobile technologies, have changed the communication landscape, eliminating the need for individuals to be in the same place and enabling remote communication in a more attractive (visual) way.

This means that people are more engaged, compared to the traditional telephony, since smartphones have features that allow mobility, internet access, calls and messaging (in case a person is not available), stickers and pictures exchange etc.

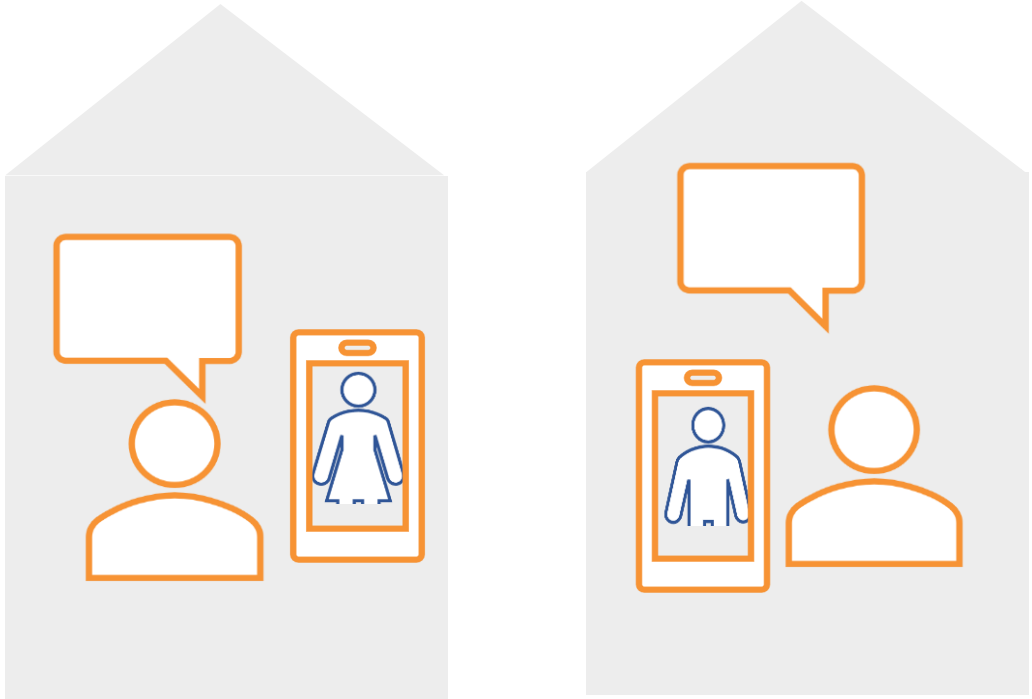
Remote communication can take place either at the *same time* (synchronous communication) or with a *lag in time* (asynchronous communication). The latter becomes realizable in two steps: the message (in text, audio, video etc.) is stored and accessed by the remote peer at a later time.

Good to Know:
"Synchronous" is a compound word based on the Greek words "syn", meaning together, and "chronos", meaning time. So "synchronous" means occurring at the same time, while "asynchronous" has the opposite meaning, not occurring at the same time.

Synchronous (Remote) Communication

Synchronous communication allows for **real-time** conversations (with strict time constraints), exchanging media in the form of **text**, **audio** (voice), **video** (visual), images, other types of files, any combination of these. Typical examples of synchronous (real-time) communication are:

- Text chat;
- Voice and video call (chat);
- Teleconference .

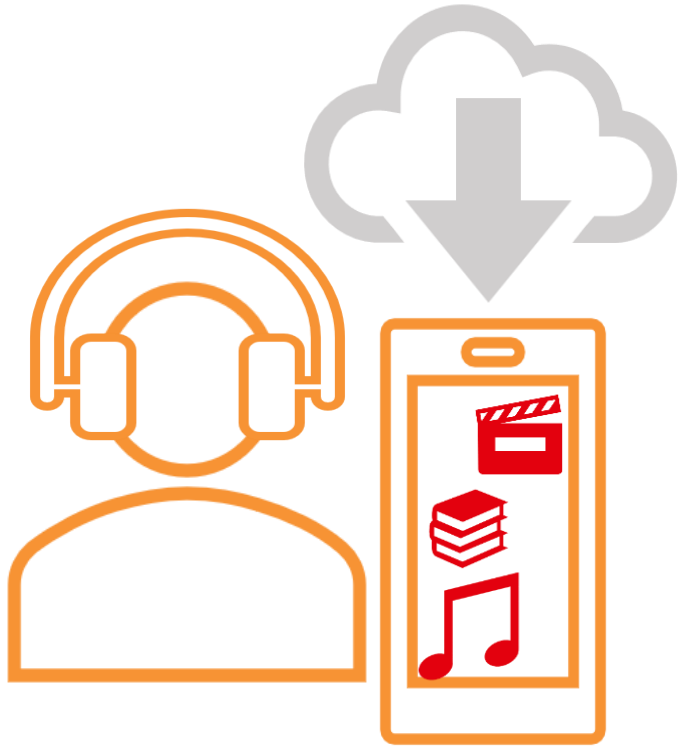


Asynchronous (Remote) Communication

Asynchronous communication allows for conversations with **relaxed time constraints**, meaning the exchange of multimedia (text, audio, video, etc.) **without the need for an immediate response**. Typical examples are:

- Chat/messaging services, and
- Email.

The user of asynchronous communication can follow their own pace and access media at a time that suits them.



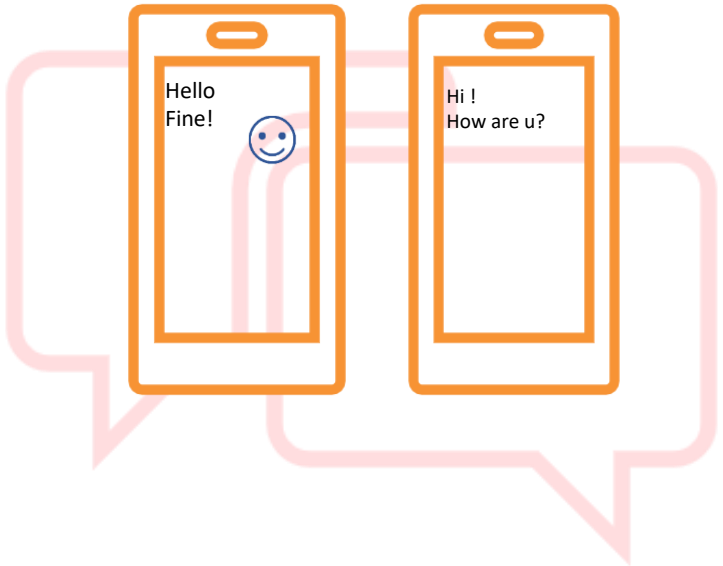
Chat and Messaging Mobile Applications

Chatting and messaging mobile applications (apps) are the main applications used by the young generation and professionals for communication.

Mobile messaging apps are very popular and compete with each other to add social networking features, improve security and provide free mobile calling and texting services.

Users take advantage of mobile apps features to communicate:

- **Synchronously** in real time by exchanging text (text chat mode), voice, video (video chat), or
- **Asynchronously**, if remote peer is not online or available, to leave messages in the form of text, voice, video or photos (messaging features).



Well Known Mobile Apps for Chatting/Messaging

Well known **mobile chat/messaging apps** are WhatsApp, Viber, Facebook Messenger, Apple Messages and internet calling service Skype, SnapChat, Discord.

These apps can be used for daily communication with friends but also with professional partners.

New apps will definitely appear in this mobile app arena as well.

Most of these applications are also available for installation on **desktop and laptop computers.**

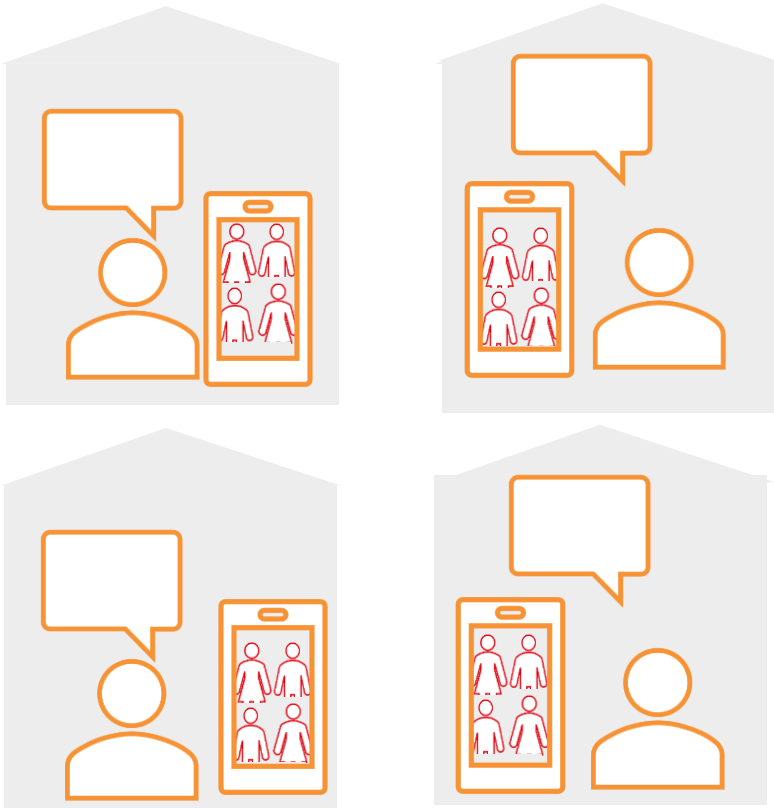
Video Calls

Video calls (chat) have also become popular for synchronous communication, and many messaging apps now offer the ability to video chat without any cost over cellular or WIFI networks.

The built-in camera and microphone on mobile devices or laptops, or external ones connected to a desktop computer, are used for video/voice chat.

Most apps extent **one-to-one** person video communication (just two people) to **many-to-many** communication by enabling group video calling, that is more than two persons– up to 5 or 6 – can participate in a video call as a group, talking to each other.

For **a larger group** of participants in a single video call, commercial web-based video conferencing services can be used. Examples of such services are Zoom, Webex, Microsoft Teams, Google Meet, Skype Business.

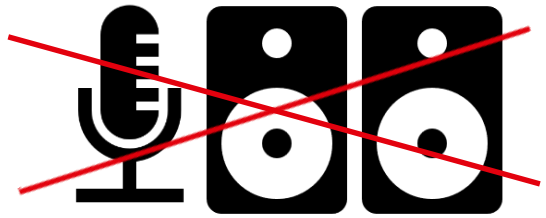


Software and Hardware Requirements

For audio and video communication the appropriate **software** must be downloaded and installed on either a computer a or mobile device.

The mobile devices, such as tablets, smartphones, and laptops are equipped with a video camera, microphone and loudspeaker.

However, in the case of a desktop computer, a web camera and a headset with a microphone are required (avoid using speakers and other types of microphones) in order to avoid audio problems such as echo and feedback.



Hint: Stay Compliant with Privacy Standards!

Hint: Compliance with **privacy standards** (GDPR, HIPAA) is very important when using third-party platforms to communicate with others.

To comply with the standards, it is important to only use platforms that comply with their rules.

How can I find more information?

For more information, search the Web with the following key – words:

"Mobile Messaging Applications"

"Video chat"

"Voice chat"

"Video conferencing software"

AND combine it with the key-word "Privacy"

Using Email

Exchanging (sending and receiving) email is still popular for **formal written** communication with your professional peers.

E-mails can be archived, electronically or printed, and constitute proof of communication. Also, you can always read it to remember details. ☺

We can say that the communication could be:

- **Informal**, like the way we communicate with people we are very close to, e.g., our family members and friends;
- **Formal**, which include a formal way of communicating with organizations and people we do not know or have a professional relationship with;
- **Semi-formal**, that is between informal and formal, e.g., you may consider using this type in a forum.

Email Account

For email-based communications you need an e-mail account:

- If you use a mobile smartphone, you probably already have a personal email account.
- If you have an Internet provider, you may already have an email address.
- If you do not have an emain account, it is time to create one.

Activity: Set-up an Email Account or Find Your Email Account (1)

Case A: You do not have an email account.

1. *Decide on which email provider you want to create a professional email account.*
   - *yahoo.de; gmail.com; outlook.com, etc.*
2. *Search and find online guides on how to set up an email account on the specific provider.*
   - *Remember to use the keyword phrase "How to create email account?";*
   - *Use a serious name for your email account:*

     E.g., first name and surname: john.smith@gmail.com instead of bestfarmer5@gmail.com).
3. *Create a secure password:*
   - *Make it long;*
   - *Use a mix of characters;*
   - *Don't use memorable keyboard paths (like qwerty) or your birthday or names of relatives.*

Activity: Set-up an Email Account or Find Your Email Account (2)

Case B: You already have an email account.

*If you have a mobile smartphone, then you already have an e-mail account. Check the **Settings** of your mobile smartphone in the **Users** and/or **Accounts** sections.*

How to Send / Receive an Email?

To send and receive email you need to have access to an **online email service through your browser** or use:

- an email client software in your desktop/laptop, e.g., Thunderbird, Outlook;
- a mobile email app on your smartphone or tablet, e.g., Gmail app, Type App, etc.

Steps:

1. Search and find on the Web *how to set up the e-mail client or app with your email account.*
2. Search and find on the Web *how to write, send, receive, delete emails and attach files.*

Activity: Search Information on How to Setup the Email Client with Your Email Account

Do you remember how to perform a browser search using a keyword?

1. *Open your browser and connect to one of the following search engines:*
   - *Yahoo.com*
   - *Bing.com*
   - *Google.com*

How to setup Thunderbird with a Gmail account?

2. *Enter as keywords:* ***how to setup Thunderbird with a Gmail account.***
3. *View the results of the first page, then browse the next pages of results. Have you found the information?*

Activity: Search Information on How to Setup an Email App with Your Email Account

1. *Open your browser and connect to one of the following search engines:*
   - *Yahoo.com*
   - *Bing.com*
   - *Google.com*

How to setup TypeApp with an email account?

2. *Enter as keywords:* ***how to setup TypeApp with an email account***
3. *View the results of the first page, then browse the next pages of results. Have you found the information?*

Activity: Search Information on How to Send an Email with Your Email Account

1. *Open your browser and connect to the following search engine:*
   - *Google.com*
2. *Enter as keywords:* ***How to send an email with Gmail?***
3. *View the results of the first page, then, click on the option Video.*
4. *Browse the result pages and look for a video demonstration.*
5. *Repeat the same with the phrases:*
   - *How to read an email with Gmail?*
   - *How to attach a file to an email with Gmail?*
   - *How to delete an email in Gmail?*

How to send an email with Gmail?

Unit 6

Advanced Digital Skills

Objectives

Upon completion of this Unit, you will

- ✓ Become familiar with the term Advanced Digital Skills for farmers
- ✓ Understand the lines between being independent and buying services
- ✓ Know how to search online courses for digital farming

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Agriculture Data Collection and Monitoring Technologies

In agriculture, different technologies can be combined in order to capture, transmit, collect, maintain, process row data, analyze and display the results so that monitoring and decision can be made.

- Devices such as sensors, telemetry systems, Internet of Things (IoT) systems, drones and airplanes (aerial pictures), satellites (satellite imagery), from earth observation systems capture and provide the raw data.
- Data networks, such as WiFi or 4/5G networks for mobile communication, transmit the data.
- Telemetry systems collect the data which are kept in large collection referred to as data bases, stored in interconnected computer systems and processed by them for analysis purposes.
- Special software is used to analyze them as well as to integrate them and display in different layers of presentations such as maps, dashboards, application known as **Geographic Information System (GIS)**. These presentation layers allows people with different roles to make decisions, e.g., farmers, advisors, experts, policy makers.

Advanced Digital Skills

Farmers should be able to understand the basics of the various technologies:

- What each technology is about;
- Which are the benefits of using this technology;
- How this technology works in general;
- What information can be extracted;
- What decision can be made based on the available information and the its analysis.

Additionally, farmers should have **basic knowledge about Digital Marketing:**

- **Farmers are not necessary to become technological or marketing specialists**, to be able to manage all these technological elements or promote products over the Internet;
- Farmers may have skills for simple daily technical operations and decision making. We refer to these skills as **Advanced Digital Skills for farmers**.

Training on Advanced Digital Skills

Farmers **can rely on specialized IT experts** and consultants, who have studied the specific topics:

- Planning/design of the solution,
- Install the equipment, and
- Analyze the data.

And, of course, the farmers can learn from the experts and other more technologically skilled farmers in a **peer-to-peer learning model,** so they can be independent as much as possible.

Farmers may receive **training on specific farm/machinery/operation software and applications** on order to carry out simple daily technical operations and take simple decisions.

Another channel of training is online courses available over the Internet and provided by well known **educational content providers**, such as Coursera, Edx, Udemy and others. On the following slides, examples of available online courses and brief guides on how to find them are provided.

The above also applies to **Digital Marketing** issues.

Geographic Information System (GIS)

A **geographic information system (GIS)** is a type of database (data collection) that contains **geographic data** (that is, descriptions of phenomena to which location is relevant), combined with **software tools** for managing, analyzing, and visualizing that data.

In a broader sense, one can consider such a system to also include human users and support staff, procedures and workflows, body of knowledge of related concepts and methods, and institutional organizations.

GIS are utilized in multiple technologies, processes, techniques and methods. They are associated with various operations and numerous applications, that relate to engineering, planning, management, transport/logistics, insurance, telecommunications, and business.

For this reason, GIS and location intelligence applications are at the **foundation of location-enabled services,** which rely on geographic analysis and visualization.

Examples of GIS

List of GIS and comparison:

[Comparison of geographic information systems software – Wikipedia]

License, source, & operating system support [edit]

GIS software	Free software	Open source	Windows	Mac OS X	Linux	BSD	Unix	Web
ArcGIS	Viewer(s)	No	Yes	No[1]	No	No	Yes	Yes
Autodesk	Viewer(s)	No	Yes	No	Yes	No	No	Yes
Cadcorp	Viewer(s)	No	Yes	No	No	No	No	Yes
CAPAWARE	Yes	Yes	Yes	No	No	No	No	No
Deegree	Yes	Yes	Java	Java	Java	Java	Java	Yes
Erdas Imagine	Viewers & Plug-ins	No	Yes	No	No	No	No	Yes
GeoBase - Telogis	Trial	No	Yes	No	Yes	Yes	No	Yes
GeoNetwork	Yes	Yes	Java	Java	Java	Java	Java	Yes
GeoServer	Yes	Yes	Java	Java	Java	Java	Java	Java
GeoTools	Yes	Yes	Java	Java	Java	Java	Java	No
GRASS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	via pyWPS[2]
gvSIG	Yes	Yes	Java	Java	Java	Java	Java	No
IDRISI	No	No	Yes	No	No	No	No	No
ILWIS	Yes	Yes	Yes	No	No	No	No	No
GeoMedia	Viewer(s)	No	Yes	No	No	No	CLIX	Yes
JUMP GIS	Yes	Yes	Java	Java	Java	Java	Java	No
Kosmo	Yes	Yes	Java	Java	Java	Java	Java	No
LandSerf	No	No	Java	Java	Java	Java	Java	No
MapDotNet	No	No	Yes	No	No	No	No	Yes
Manifold System	No	No	Yes	No	No	No	No	Yes
Microsoft MapPoint	Discontinued	No	Yes	No	No	No	No	Yes
Pitney Bowes MapInfo Pro	Viewer(s)	No	Yes	No	No	No	Yes	Yes
MapServer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	AMP
Maptitude Caliper software	No	No	Yes	No	No	No	No	Yes
MapWindow GIS	Yes	Yes	Yes	No	No	No	No	No
Oracle Spatial	No	No	Yes	Yes	Yes	No	Yes	Yes
PostGIS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
QGIS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RegioGraph	No	No	Yes	No	No	No	No	No
RemoteView	No	No	Yes	No	No	No	No	No
SAGA GIS	Yes	Yes	Yes	Yes	Yes	Yes	No	No
SAP HANA	Free Trial	No	No	No	Yes	No	No	Yes
Smallworld	No	Yes	Yes	No	Yes	No	Yes	Read-only
SPRING	Yes	Yes	Yes	No	Yes	No	Solaris	No
TerraLib TerraView	Yes	Yes	Yes	No	Yes	No	No	No
TNTmips	Viewer(s)	No	Yes	Yes	Yes	No	Yes	No
TransModeler Caliper Software	No	No	Yes	No	No	No	No	No
uDIG	Yes	Yes	Java	Java	Java	Java	Java	No
GIS software	Free software	Open source	Windows	Mac OS X	Linux	BSD	Unix	Web

Online Courses on GIS

Anyone in the Agriculture sector can find online and attend many courses on GIS. There are plenty courses addressed to beginners as well as advanced learners. Here, some examples from Coursera are following:

- Fundamentals of GIS | Coursera
- Ecosystem Services: a Method for Sustainable Development | Coursera
- Geographic Information Systems (GIS) | Coursera

Also, anyone may find more general courses on “Digital Farming”. In the next slides, examples and how to search for such courses are provided.

Examples of Online Courses on Digital Farming

UDEMY course: Digital Farming Foundation

- English, with fee;
- How digital farming increases productivity, Digital farm technology, Tips for digital farm optimization etc.;
- https://www.udemy.com/course/digital-farming-foundation/

EDX course: e-Learning on Digital Agriculture

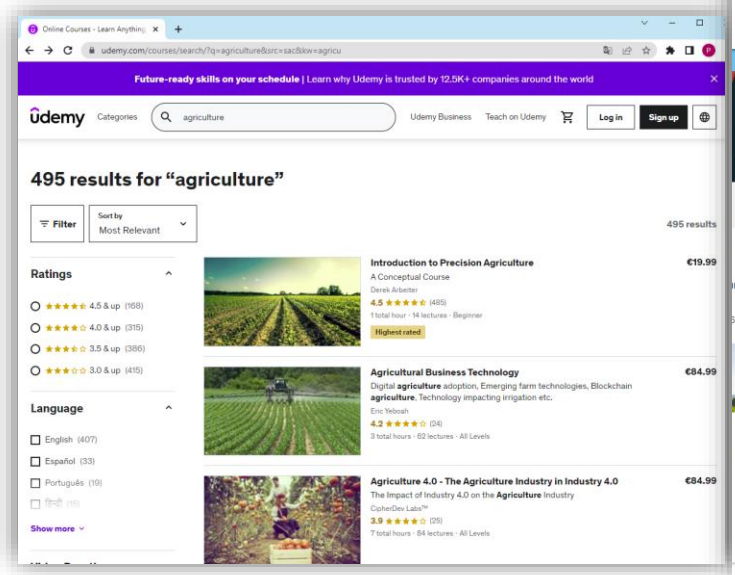
- English, free;
- Agriculture is no exception to digital revolution, going beyond a simple adoption of Information and Communication Technologies (ICTs). According to ICRISAT, digital agriculture is defined as "ICT and data ecosystems to support the development and delivery of timely, targeted information and services to make farming profitable and sustainable while delivering safe nutritious and affordable food for all";
- https://www.edx.org/course/e-learning-on-digital-agriculture

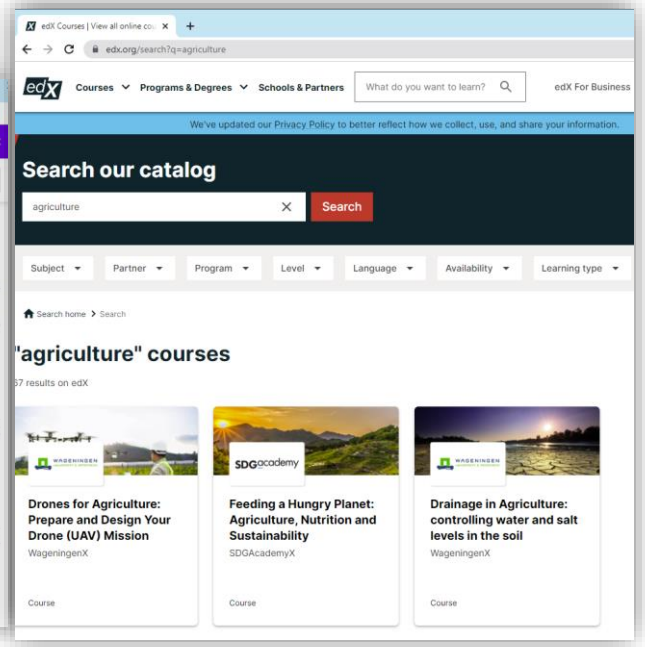
United Nations SDG: Learn course: e-Learning on Digital Agriculture

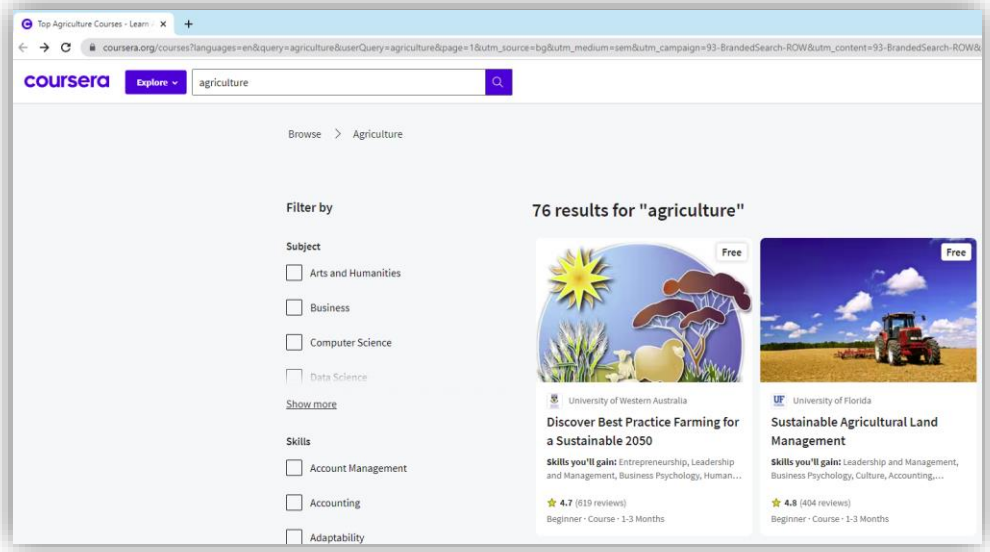
- English, free;
- Digital Agricultural Technologies (DATs) are innovations that enable farmers and agribusiness entrepreneurs to leapfrog to increase their productivity, efficiency, and competitiveness, facilitate access to markets, improve nutritional outcomes and enhance resilience to climate change. These technologies range from mobile apps to digital identities for farmers to solar applications for agriculture to portable agriculture devices. DATs are increasingly becoming indispensable in the global food and agriculture sector, from fast and convenient information delivery to providing virtual marketplaces. Considering the fact that digital technologies can accelerate agro-food outcomes is juxtaposed with low adoption rates of the same, the World Bank's operations are increasingly incorporating digital agriculture as a critical element in its operations. Thus, it is important to study digital agriculture technologies in further detail;
- https://www.unsdglearn.org/courses/e-learning-on-digital-agriculture/

Activity

1. *Visit popular online course providers, such as:*
   - *https://udemy.com*
   - *https://coursera.org*
   - *https://edx.org*
2. *In the search box insert the keyword “agriculture”.*
3. *Browse the results to find courses that may interest you.*







Closing

Where Can Farmers Acquire the Needed Digital Skills?

Focus

- ✓ In this closing section, it is briefly discussed where farmers can acquire the necessary digital skills in a formal or informal training setting

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The farmers acquire the needed digital skills as…

Basic digital skills:

- Mainly informal but also formal training.

Advanced digital skills:

- Mainly formal training but informal is also possible for the basic parts.

Informal training	Formal training
What is: No trainer, no training settings, in face-to-face approach, gatherings on the farm or home, on-site demonstrations, internet resources. *Sources:*	What is: Face-to-face training, with guidance, online learning courses or blended learning. *Sources:*
▪ *Family members (youngsters)*	▪ *Training organization*
▪ *Friends/Neighbors*	▪ *Agricultural organization*
▪ *Peers (other farmers and colleagues)*	▪ *Government agencies*
▪ *Consultors*	▪ *Online courses*
▪ *Farm suppliers*	

Module 2 has been designed to be used in both informal and formal training.

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Source: EIP-AGRI Seminar: New skills for digital farming. FINAL REPORT - JUNE 2020. Link

Are You Equipped with the Knowledge of Essential Digital Skills?

We‘re at the end of Module 2!
But before we finish, there are some closing questions where you can test your knowledge!

Don‘t worry; it won‘t be difficult if you have followed the course!

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Check your knowledge!

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1. Which of the following passwords is stronger?

Only one answer is correct!

A. John1234

B. John1990

C. John051190

D. J0Hn!2nO

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2. Which of the following is personal data

Only one answer is correct!

A. IP address

B. E-mail address

C. All of them

D. Cookies IDs in the browser

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3. The “s” at the end of the httpS means

Only one answer is correct!

A. Simple

B. Secure

C. Super

D. Sensitive

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4. When the lock symbol appears in the browser it means that the browser has locked the page because it is not secure.

Yes, the statement is correct.

No, the statement is wrong.

5. Which of the following is NOT sensitive personal data

Only one answer is correct!

A. Photos

B. Home address

C. Health related data

D. Political opinions

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6. Can the sender be an indicator of whether an email is spam?

Yes

No

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7. What should you never do if you receive a supposed spam-mail?

Only one answer is correct!

A. Delete the e-mail

B. Check the sender

C. Check the reference line

D. Reply and ask if it is a spam-mail

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8. All text or video chat/conferencing application is GDPR compliant

Only one answer is correct!

The statement is correct (True)	The statement is wrong (False)

Suggestions for further reading

- Εθνική Ακαδημία Ψηφιακών Ικανοτήτων, Μαθήματα για τον Ψηφιακό Πολίτη. Σύνδεσμος: https://nadia.gov.gr/ (in Greek)

Authors of the module

- *Pantelis Balaouras (Connexions), Konstantinos Tsibanis (Connexions), Effrosyni Tsili (Connexions), Athanasia Katsagianni (Connexions)*

Contributors

- *Angela Ivanova (INI-Novation)*

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References in English

- DigComp 2.2: The Digital Competence Framework for Citizens, Joint Research Centre (of EU) Publications. Link
- EIP-AGRI Seminar: New skills for digital farming. FINAL REPORT - JUNE 2020. Link
- E-mail spam, Wikipedia. Link
- Geographic Information System (GIS), Wikipedia. Link
- Get started with Gmail for Google Workspace - What you can do with Gmail, Google Workspace Learning Center. Link
- Google Meet training and help, Google Workspace Learning Center. Link
- Manage meetings and events experiences, Microsoft Learn. Link
- Business Email, HP Life. Link
- Working and Collaborating Online, LinkedIn Learning. Link
- Working with Computers and Devices, LinkedIn Learning. Link

About the Project

AgriSkills – Entrepreneurial Skills for Digitalization of Rural Agriculture is a European project funded by Erasmus+ Program. Our goal is to raise awareness about the digital transformation in agriculture and to provide a training program for entrepreneurial skills in digital, precision and smart farming. Digital agriculture, smart and precision agriculture are important to improve the sustainability of the food industry.

The results of the project stimulate the awareness, knowledge, and skills of learners and trainers in the field on the issues of digitalisation and digital farming:

- *Survey* on the real needs in skills, knowledge and competence development.
- *AgriSkills Training Program.* Developed training program organised like a "guided tour" through the whole range of digital opportunities in agriculture and introducing the needed skills and competencies implemented into a complete training.
- *AgriSkills Reference Catalogue* with collected good practices. AgriSkills will showcase many inspiring initiatives as practical examples, technologies and business models that can be applied in practice.
- *E-learning Platform* as a completely new training approach for digital farming topics for our target groups. Link to the platform: *https://training.agriskills40.com*.

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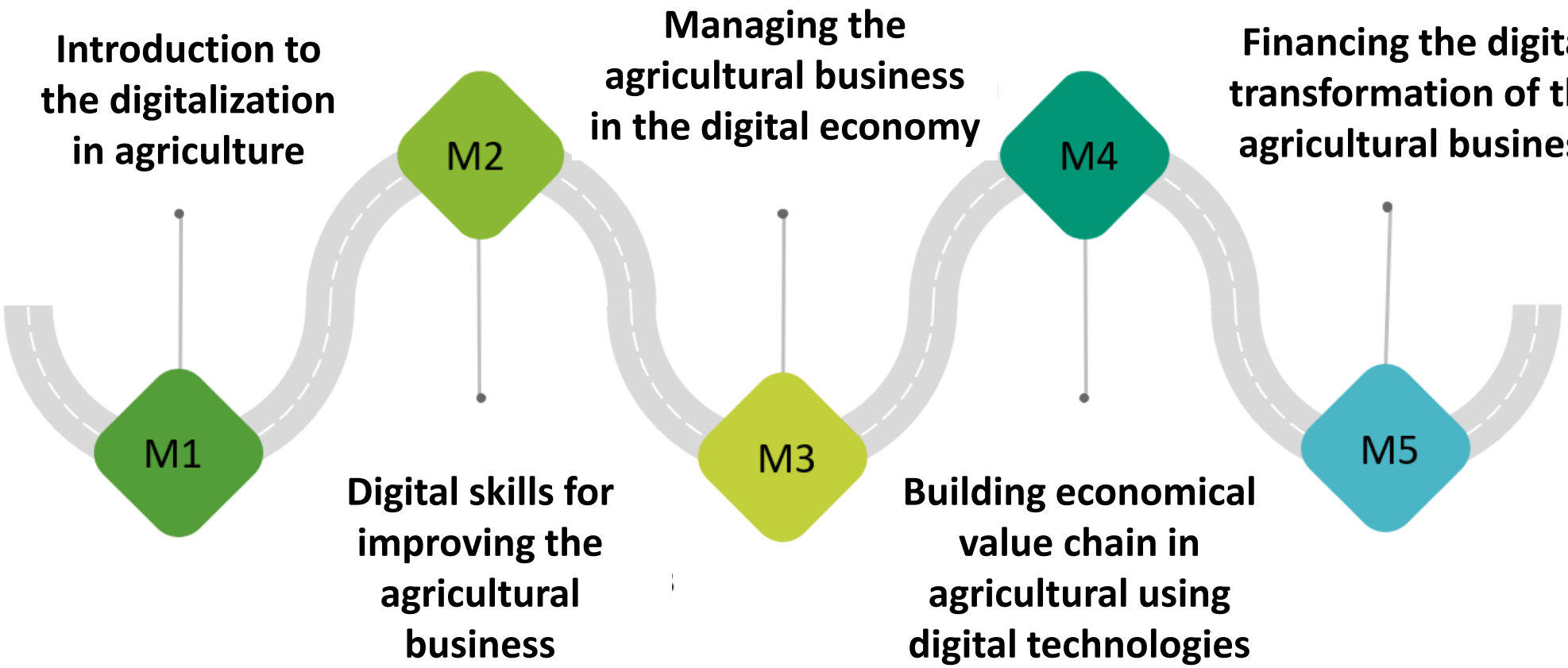
AgriSkills Learning Roadmap



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