smart4food

innovative microlearning for farmers

ISSUE 2

22.08.25

smart4food MAGAZINE

KEY COMPETENCES MAP

PROJECT RESEARCH IN CROATIA

WEBSITE HIGHLIGHTS

www.smartforfood.eu

Co-funded by the European Union

Financed with the funds of the European Union. The expressed opinions and positions reflect solely the position of the author and do not necessarily coincide with the positions of the European Union or the Agency for Mobility and Programs of the European Union. Neither the European Union nor the granting body can be held responsible for them.

CONTENT

WELCOME TO THE 2ND EDITION OF THE SMART4FOOD E-ZINE!

We are excited to share updates on our project progress and current activities. We are now halfway through the project implementation phase and have already achieved several important milestones.

In this issue, you'll find an overview of our recent research activities, particularly our work on identifying the key competences required by our stakeholders. These insights will be used to shape the curriculum and educational materials we are developing.

You'll also get a closer look at the Smart4Food project and our partners. As the Smart4Food Hub is one of the major outcomes of this project, we're pleased to introduce our website and highlight some of its key features. We hope you enjoy reading this edition, and we encourage you to share it with your colleagues, friends, and partners.

Empowering Small Farmers In Europe Through Digital Skills and Technology

In the face of climate change, market volatility, and increasing demand for sustainable practices, family farms and smallholders across ***Europe are discovering a powerful ally: digital technology.*** *By developing digital skills and adopting smart tools, these farmers are not only improving their efficiency but also enhancing their sustainability and resilience.*

01 Boosting Efficiency and Productivity

Digital tools such as precision farming apps, GPS-guided machinery, and farm management software allow small farmers to optimise resource use. For example, sensors and drones can monitor soil health and crop conditions in real time, enabling targeted irrigation and fertilisation. This reduces waste, lowers costs, and increases yields—critical benefits for farmers operating on tight margins.

02 Enhancing Sustainability

Sustainability is no longer a buzzword; it's a necessity. Digital technologies help farmers adopt environmentally friendly practices by providing data-driven insights. Platforms that track carbon footprints, water usage, and biodiversity impacts empower farmers to make informed decisions that align with EU sustainability goals. Moreover, digital marketplaces and traceability tools allow farmers to showcase their sustainable practices to consumers, adding value to their products.

03 Improving Market Access and Transparency

Digital literacy opens doors to broader markets. Online platforms enable small farmers to sell directly to consumers, bypassing intermediaries and increasing profits. Blockchain-based systems offer transparency in the supply chain, building trust and ensuring fair trade. These tools also help farmers comply with regulatory requirements more easily, reducing administrative burdens.

04 Fostering Community and Innovation

Digital skills also foster collaboration. Online forums, webinars, and agricultural networks connect farmers across regions, facilitating knowledge exchange and innovation. This sense of community is vital for smallholders who may otherwise feel isolated in rural areas.

05 Overcoming Barriers

Despite the benefits, challenges remain. Limited internet access, lack of training, and financial constraints can hinder adoption. That's why EU initiatives like the Digital Europe Programme and Horizon Europe are crucial—they provide funding, infrastructure, and education to bridge the digital divide.

For family farms and small-holders, digital transformation is not just about technology - it's about empowerment.

By embracing digital skills and tools, they can cultivate a future that is more efficient, sustainable, and resilient. The journey may be complex, but the rewards are abundant- and the time to start is now.

HOW TO NAVIGATE THE SMART4FOOD WEBSITE

Victoras Iordanou

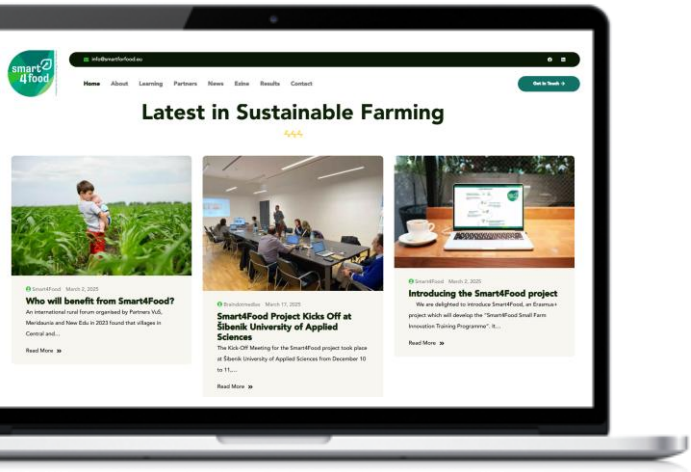
Key Tools & Sections You Shouldn't Miss

By Victoras Iordanou, Project Manager, Magnetar

*The project's website, **smartforfood.eu**, is a growing digital resource for agricultural professionals, trainers, and rural communities across Europe. As digital transformation reaches every corner of the agri-food sector, the platform offers practical, accessible tools to support this shift. Here's how to get the most out of it.*

The homepage gives a clean and intuitive entry point. Visitors immediately see the project's mission, partner countries, and the latest updates. The "About" section outlines Smart4Food's focus on digitalisation and intergenerational learning, while introducing the Erasmus+ partners that are making it happen.

The real value lies in the "Training" section. Here, you'll find a growing bank of tailored resources designed to build digital skills in agriculture. These materials are free and suitable for farmers, VET learners, and trainers. The training is grouped into themes like digital tools, innovation in food systems, and environmental sustainability.



The "News" section keeps stakeholders informed about project milestones, while the "Pilot Activities" page (coming soon) will provide updates on field testing in each country. For those who want to connect or stay informed, the "Contact" and social media links allow readers to reach out or follow ongoing progress. Whether you're a farmer looking to upskill, a trainer designing digital curricula, or simply curious about the future of food systems, smartforfood.eu offers the tools to take part. Start exploring now and check back as new resources are added.

CREATING THE KEY COMPETENCES MAP

*The project partner from **Ireland, Momentum Educate and Innovate (MEI)**, was responsible for developing the **Key Competence Map for the Smart4Food project**.*

This activity included desk research, but also gathering insights from stakeholders in all the participating partner countries. Firstly, MEI carried out desk research and prepared a list of criteria for the identification of key competencies. This was then reviewed by all Partners before being finalised.

Each Partner contributed to **building a Smart4Food stakeholder database**, adding **relevant stakeholders from their own country,** which included participants from **every target group**:

TG1 Family Farms and Smallholders

TG2 Agricultural Education Experts

TG3 Representatives of Framing and Regional Development Agencies

Next, MEI developed an online survey and a set of three interview questions, with questions specifically targeted for each target group. Partners engaged the Stakeholder network in their own countries to conduct the surveys and interviews, and then held a focus group in each country to elicit richer insights.

Once the surveys, interviews and focus groups were completed, all of these personal experiences and insights were collated, and the data was analysed by MEI, who developed the final Key Competence Map. This Map will inform the development of the Curriculum and the outline of the learning content, which will be developed over the coming months.

HOW PROJECT RESEARCH WAS CONDUCTED IN CROATIA

On Tuesday, May 20th 2025, a focus group was held at the Šibenik University of Applied Sciences on the topic of professional development in agriculture. This was one of the initial activities of the Smart4Food project, which aims to create short, practical educational materials tailored for farmers.

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Alongside representatives of the University, including Bojana Grubišin, Jelena Šišara PhD, and Nikolina Gaćina PhD, participants included representatives from OPG Granum – Ivan Škugor, Domagoj Živković from OPG Laurenta, Mile Bilić from OPG Anica, Meri Krnić from the Local Action Group More 249, Jelena Ružić from Cekom 3lj, and Ante Alduk from the Vocational Secondary School in Šibenik.

The discussion covered important topics such as the use of digital tools, new techniques and technologies in agriculture, and opportunities for professional training. Numerous challenges and priority areas for development were identified, including branding, cooperation, networking, accounting, promotion of local products, processing, sales, and marketing.
This meeting was an excellent opportunity to connect representatives from the agricultural, educational, public, and civil sectors, and it laid the foundation for future cooperation in the transfer of knowledge and good practices.

In addition to the focus group, several other research activities were carried out in Croatia to identify the professional development needs of farmers. One such method involved conducting interviews with small and family farms, smallholders, educational institutions, and regional development agencies.

Stakeholders in Croatia have highlighted the following **areas where more education is needed**:

- soil fertilisation, olive processing, and the preservation of olive oil,
- how to cope more with the administrative obligations,
- using weather stations in vineyards and applying drone technology in vine growing,
- use of data obtained from milk or soil analysis to improve dairy cow breeding/ soil quality,
- digital literacy in general,
- application of new agrotechnical practices,
- impact of climate change on plant growth and development,
- importance of irrigation and heat stress in crop production,
- organic farming practices,
- basic education about agricultural activities,
- accounting for family farms, branding, promotion, and sales.

Another research method was an online questionnaire, which collected 41 responses from Croatia. This survey, conducted among Croatian agricultural stakeholders, sheds light on the current digital maturity, knowledge sources, and training preferences within the sector. The results offer valuable insights for policymakers, agricultural educators, and innovation support networks aiming to foster sustainable development and digital inclusion in rural areas.Most participants fall within the 30–50 and 50+ age brackets, suggesting a mature and experienced farming population.

Family members remain the primary source of agricultural knowledge, especially among smallholders. However, more engaged respondents also rely on:

- NGOs and EU-funded projects
- Research institutions and universities
- Online resources and professional networks

This highlights a divide between more digitally connected and traditionally oriented farmers.

A significant majority report using digital tools, particularly: Smartphones, agricultural apps and software platforms. Most respondents express confidence or high confidence in using digital tools. Skills related to innovation, communication, collaboration, and future planning are generally rated as “some” to “good”, showing room for growth, particularly in less technologically advanced profiles. Most stakeholders have access to smartphones, tablets, and computers, and report reliable internet connectivity—indicating a strong base for rolling out digital training programs.

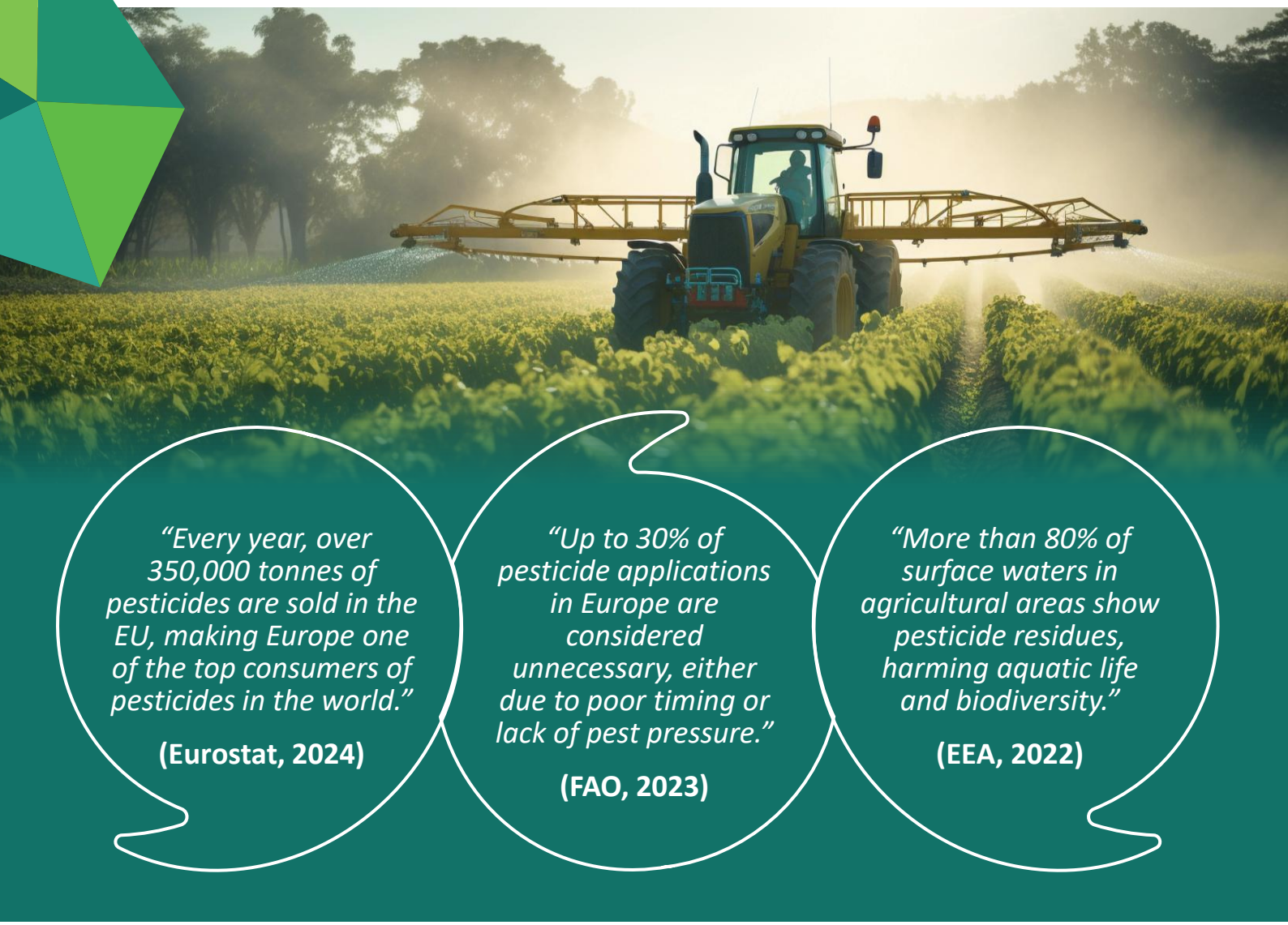
The Croatian agricultural sector shows strong interest in adopting digital tools and training, particularly when these are practical and relevant to everyday farming. To ensure broader inclusion, especially among older or less digitally skilled farmers, there is a need for tailored training programs, blended learning approaches that combine online resources with local support, and targeted outreach strategies that build on trusted family and community networks. Additionally, policy interventions are essential to support digital access and participation for smallholders in remote areas, helping to close the digital divide and promote sustainable agricultural development.

WHY IS IT IMPORTANT TO TEACH FARMERS THE PROPER USE OF PESTICIDES?

By Neslihan ÜTE MERMER

*These **two voices from the fields of Europe** tell us something important: farmers often rely on habits, traditions, and guesswork rather than data or modern methods when it comes to using pesticides and fertilisers. It's not because they don't care. In fact, **farmers care deeply about their crops and the land.***

But many of them don't have the training or information to make better choices. And when it comes to pesticides and fertilisers, making the wrong choice can harm not just the soil but the entire ecosystem — and even the farmer's own income. According to the European Environment Agency, around 40% of European soils show signs of chemical stress, much of it linked to excessive pesticide or fertiliser use. Overuse of nitrogen-based fertilisers, for example, leads to nitrate pollution, which contaminates groundwater. Pesticides can kill not only pests but also the beneficial insects and microbes that keep soil alive. This reduces soil fertility and makes crops even more dependent on chemicals.



"Every year, over 350,000 tonnes of pesticides are sold in the EU, making Europe one of the top consumers of pesticides in the world."

(Eurostat, 2024)

"Up to 30% of pesticide applications in Europe are considered unnecessary, either due to poor timing or lack of pest pressure."

(FAO, 2023)

"More than 80% of surface waters in agricultural areas show pesticide residues, harming aquatic life and biodiversity."

(EEA, 2022)

Globally, it's estimated that about 20% of pesticides sprayed on fields never hit their target pests — they're carried by wind or water, spreading toxic effects far beyond the farm. This is a huge waste of money and resources for farmers. It also increases the risk of pesticide resistance, meaning that insects and weeds adapt, and the chemicals stop working effectively over time. The farmers from Cyprus, who want to use fertilisers efficiently but don't know the condition of their soil, are not alone. Many small farmers don't have access to simple soil tests. Without knowing what nutrients their soil actually needs, they might add too much fertiliser or the wrong kind. This leads to weak plants, polluted rivers, and wasted money. The Croatian vine grower's quote shows another problem: spraying has become routine. Without clear guidance or signals, farmers often treat their crops "just in case," instead of only when it's necessary. This practice is not only expensive but also harmful in the long run. It's like taking medicine every day without knowing if you are sick — eventually, it does more harm than good. The solution is not to blame farmers but to give them the right knowledge and tools.

Teaching proper pesticide use means helping farmers understand:

- When and how to spray, based on actual pest observation or weather conditions
- How much is enough, avoiding overuse that can harm soil life and nearby water
- What alternatives exist, like biological pest control or crop rotation

Modern technology can also help. Drones, sensors, and mobile tools can tell farmers exactly where and when to spray, saving chemicals and protecting the environment. But technology alone is not enough. Farmers need training and real-world examples to trust and adopt these new practices. This is not just a "farmer problem." Pesticide misuse affects all of us — from the water we drink to the food we eat.

" Nearly 46% of tested fruits and vegetables in the EU still show pesticide residues, according to the European Food Safety Authority. Even if they're within legal limits, it still signals overuse."

(EFSA, 2023)

Reducing pesticide use through smarter practices makes our food cleaner and healthier. It also protects the bees, butterflies, and earthworms that are essential for natural pollination and soil health. Our project Smart4food can play a big role here. We will create learning networks, connect farmers across countries, and share real stories like those from Slovakia, Turkiye, Ireland, Italy, Cyprus and Croatia. We will create an e-learning education platform to teach proper use of pesticides and other effective uses of smart farming. organize workshops where farmers learn by doing - testing soil, checking pest traps, or using smartphone apps to track their fields. Imagine a farmer who no longer sprays "because we always have," but because they have clear, data-based signals telling them when it's necessary. Or a farmer who knows exactly which nutrients are missing in the soil, using the right fertiliser at the right time, without waste. This is the future we need to aim for - a future where farming is both productive and sustainable.

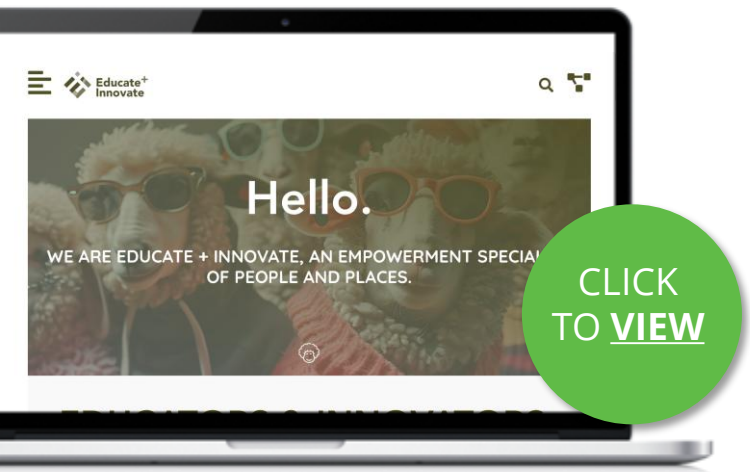
Sources:
- Eurostat, "Pesticide Sales in the EU," 2024
- FAO, "Reducing Pesticide Overuse in Europe," 2023
- EEA, "State of European Environment," 2022
- EFSA, "Pesticide Residues in Food – Annual Report," 2023

MEET THE PARTNER FROM IRELAND: MEI

For over twenty years, Momentum Educate and Innovate has been educating and innovating in Ireland and throughout Europe.

As an empowerment specialist of both people and places, particularly in rural areas, we actively support practitioners and learners across the Agriculture, Food Production and SME sectors across Europe. Previous projects and current work are based on mentoring and supporting adult learners, particularly in entrepreneurship.

The team bring a unique set of specialist skills and experience to SMART4FOOD. Denise Callan, the Momentum Educate and Innovate lead on SMART4FOOD, is a graduate of Agriculture and Rural Development from UCD. She has previously worked with small-holders looking to diversify and expand their core agricultural activity to ensure the continuing viability of their farms. She also has extensive experience working with SMEs in the food sector across Ireland and specific expertise in entrepreneurship.



We will bring all of this experience into the co-development of the SMART4FOOD microlearning system with our colleagues in Magnetar and New EDU. Importantly, this system will provide training activities, which will enable farmers to learn in short periods of time, without disrupting their daily tasks. The Momentum in-house design and production team will support the development of training resources in a variety of multimedia formats.

Momentum Educate and Innovate is recognised for its impact dissemination services to several European projects, and we will also bring this expertise to SMART4FOOD, developing the Project Dissemination Strategy and the creation of the project branding. We will also regularly publish articles on the project website with updates on progress and key developments. Momentum Educate and Innovate will also publish a series of Newsletters throughout the project, and these will be shared with key stakeholders, including government and training agencies, as well as agriculture agencies and small-holders.

Underpinning this work, we are excited to create a more sustainable and equitable future for all and look forward to collaborating with our project partners on SMART4FOOD. Learn about all the project Partners on our website

Educate+ Innovate

MEET THE PARTNER FROM TURKEY:

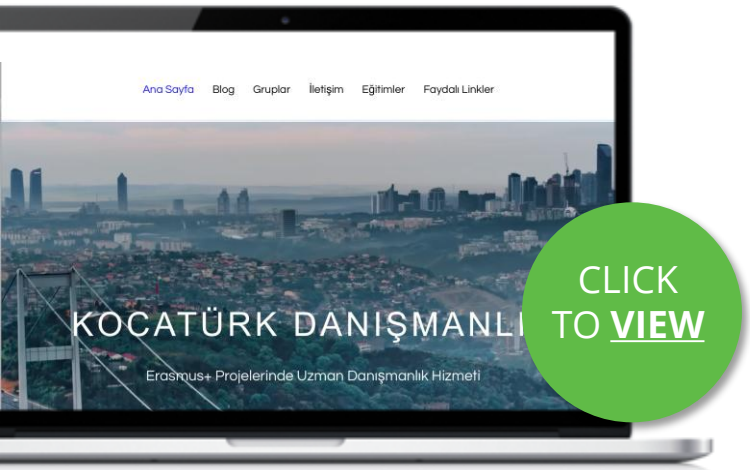
KOCATÜRK DANIŞMANLIK

KOCATÜRK DANIŞMANLIK; launched in 2018 with the leading of 32 academicians and trainers who has experience of writing, conducting and consulting projects for more than 13 years.

Our firm serves to governmental institutions and public sectors in many project areas such as Erasmus+, Development Agencies, IPA-II, KOSGEB, İKG-Pro, IPARD, Embassy, EU Grants, Horizon 2020, etc.

We are an organisation by offering consultancy with good quality to all the public and private institutions which care about change and development. We also offer employability opportunities to the young people by raising awareness of entrepreneurship in the sector of projects. Our aim is to raise the standarts of general education of our country while working with Turkish and European experts(with the network we built nationally and internationally), by ensuring them to benefit from the grants such as EU, World Bank and National Agency.

KOCATÜRK has also competences in the IT area and experience in the creation of various IT solutions: websites, e-learning platforms, games, web and mobile applications. Its staff is formed by professionals with engineering and business administration backgrounds. It is a software and elearning provider working both with national customers and European partners in EU projects.



KOCATURK is a provider of technologies for long-distance training. It has its own elearning platform and a solid expertise on open source platforms. Its core business is based on VET and development of web-based solutions for collaborative learning and educational content management with a special focus on issues related to hard and soft skills development.

KOCATURK supplies complete and integrated solutions built around different target users' needs. Thanks to the experience gained throughout the years in the domain of knowledge and content management, KOCATURK makes it possible for private companies and public agencies to develop their own "store of knowledge", obtaining significant competitive advantage. Its products are simple and intelligent platforms, which give users access to a great variety of contents and to the "elearning experience" without requiring specific IT competences. KOCATURK is fully engaged also with social networks, blogs and elearning that supports learning initiatives of wide range groups. It is conducting training and elearning courses for unemployed and disadvantaged groups of people.
To learn more about the work of KOCATURK and the other project partners, visit the project website.

KOCATÜRK
DANIŞMANLIK

Our Partners

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Educate+ Innovate

NEW EDU, N.O.

VELEUČILIŠTE U ŠIBENIKU

GAL MERIDAUNIA

KOCATÜRK DANIŞMANLIK

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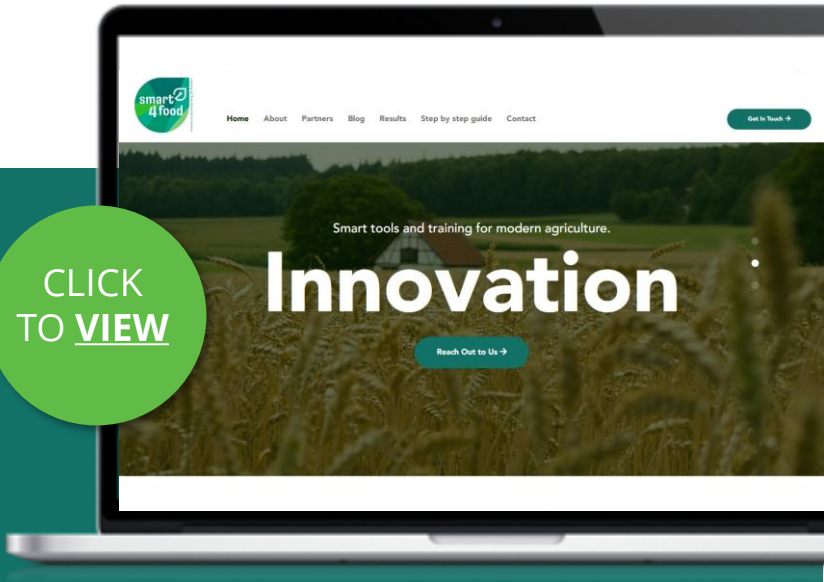

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