

STATEMENT OF SUPPORT

PURPOSE

The purpose of this document is to motivate stakeholders in the Artificial Intelligence (AI) field – AI companies, sector representatives, policy actors, social partners, standardization organisations, national qualification agencies, VET and HE institutions, trainers/mentors, and field experts – to a) directly support the recognition of the validity of the ARIS project’s learning outcomes in terms of addressing the skills, knowledge and competences required by ICT professionals to understand, develop and use AI applications, and b) contribute to the advancement of the project’s objectives to reinforce education in digital competences, based on the principles of common interest, reciprocity and complementarity.

CONTEXT

The Statement of Support has been created in the context of the [Erasmus+ project ARIS](#), which aims to strengthen the vital digital competencies in VET provision for ICT professionals by offering **an up-to-date curriculum and open educational resources in AI** to address the existing occupational skills needs and mismatches. This objective is in line with the priorities of the Digital Europe EU Program and the Digital Education Action Plan, to support the upskilling of the workforce and update the European Digital Competence Framework with AI related skills requirements.

AI revolutionizes the economy and society function by automating tasks and business processes and managing workflows and critical data more effectively. The fast-paced development of AI technologies in diverse economic and social realities exponentially augment the demand for ICT professionals with the right combination of AI and transversal skills.

AI is currently a subject of ICT specialization mostly offered at the highest level of tertiary education. It makes upgrading initial and continuous VET provision in the field essential so that existing and future ICT professionals can acquire and develop the AI skills and competencies required to respond to modern workplace requirements and succeed in a competitive labor market.

An extended labor market analysis, which comprised a combination of research activities (e.g. online job vacancies analysis, literature review on skill needs, survey) and consultation wide consultation with EU/national sectorial actors showed the set of (initiative, digital, and business) skills, knowledge, competences and attributes required by ICT professionals to work with Artificial Intelligence and respond to modern workplace requirements. Relevant skills include – among others – to apply concepts of machine learning to real-life problems, develop machine learning models, identify patterns in data, build artificial neural networks, and communicate the merits of AI use cases. Deep learning, natural language processing, computer vision, and robotics are among the most needed skills.

Based on the evidence collected, the partnership developed a formal VET curriculum for ICT professionals on AI referenced to the 5th EQF level, consisting of 4 units of learning outcomes that are further broken down into 24 lessons.

Learning Unit 1: Foundations of Artificial Intelligence

- L1.1.: Scope of Artificial Intelligence
- L1.2: Problem-solving with search algorithms
- L1.3: Knowledge representation
- L1.4: Machine Learning
- L1.5: Applications of Artificial Intelligence
- L1.6: Ethical implications of Artificial Intelligence

Learning Unit 2: Introduction to Machine Learning

- L2.1: Introduction to Machine Learning
- L2.2: Languages and Resources
- L2.3: Data Transformation and Visualization
- L2.4: Linear Methods for Supervised Learning
- L2.5: Non Linear Methods for Supervised Learning



- L2.6: Unsupervised Learning

Learning Unit 3: Neural Networks and Deep Learning for Vision

- L3.1: Brain & Neural Networks
- L3.2: Simple Perceptrons and Supervised Learning
- L3.3: Multilayer Perceptrons and Keras
- L3.4: Deep Learning for Image Classification
- L3.5: Different CNN for Image Classification
- L3.6: Object Localization: YOLO_v3 model

Learning Unit 4: Deep Learning for Natural Language Processing & Big Data Analysis

- L4.1: Word Embedding and Text Classification
- L4.2: Neural Networks for Natural Language Processing and Libraries
- L4.3: New Approaches, applications, open problems
- L4.4: Big Data: problems, techniques, Hadoop
- L4.5: Big Data: Hadoop and Spark
- L4.6: Big Data: analytics, visualization, applications

The ARIS learning outcomes, as organised around learning units, are fully detailed in the following report:

<http://www.aris-project.eu/2020/05/15/structure-of-arisis-learning-units/>

SCOPE

I, the undersigned, herewith declare to support the efforts of the ARIS project, recognizing the added value of the following project results:

- VET learning outcomes for training provision in Artificial Intelligence for ICT professionals, based on market needs analysis and validated by trainers and field experts ([Link](#))
- Formal VET curriculum on Artificial Intelligence for ICT professionals ([Link](#))
- Open Educational Resources for training ICT professionals in Artificial Intelligence technologies and applications ([Link](#))
- Vocational Open Online Course (VOOC) and content in Artificial Intelligence technologies and applications ([Link](#))

and committing to support, within our capacities and available resources, their wide update and mainstreaming by engaging in the following non-binding activities:

- Widespread dissemination of training materials and best practices aimed at enhancing the skills of construction trainers, promoting their replication and scaling up.
- Vocal advocacy vis-à-vis political actors at all levels for a better support of the upskilling of ICT professionals in the AI field.
- Promoting the incorporation of AI skills requirements into the European e-Competence Framework
- Raising awareness on the societal and economic benefits emanating from the development and uptake of Artificial Intelligence (AI) applications and the need of better skilled and qualified ICT professionals.
- Mutual exchange of information and knowledge on public and private initiatives aimed at increasing the quality and supply of skills development opportunities for ICT professionals, VET programmes and apprenticeships schemes.



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