Training materials created for the Training program

30.4.2022

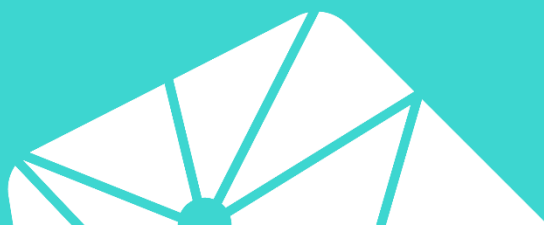# DIHUB

DIGITAL INNOVATION HUB FOR CLOUD BASED SERVICES

Content

1. Introduction

The Digital Innovation Hub for Cloud Based Services - DIHUB – is an EU-funded project under the ERASMUS+, Key Action 2, and Sector Skills Alliances programmes. The main aim of the HUB is to provide a European-wide, transnational, interconnected service platform and network for cloud-based services and technologies. Partners from five European countries have worked together to develop a hub model of clustered nodes. These hubs are learning and development environments to VET students, teachers as well as for companies. In the hub, students can update their future plans, their knowhow, skills, and digital service creation skills for companies. On the other hand VET-providers and VET teachers have the curricula to be utilised in their qualifications and training programs.

The purpose of this document is to present a holistic view how the training materials have been created and described and how they are planned to be developed in the long run.

2. Training programs and training materials

2.1. Training materials fit to different training programs

Created training materials can be utilised in different qualifications and training programs dealing with cloud technology and services. There is an excellent fit into Iinformation and media technology programs as well as to applied business programs. Training materials can be used also in market based programs and as a part of informal training. In addition to VET providers, teachers and students, any learner can utilise the training materials. For instance staff in SMEs' are one of the core customer groups who may benefit from the training materials in upskilling and reskilling.

2.2. Modern training materials

As technology changes fast training materials are in a continuous change. Modern training material is an entity created on the basis of the objectives of the curriculum, in which the parts seamlessly support each other. The training materials are multi-format, consisting of both printed and electronic materials and various tools, for example participation in the events. It is possible for users to put together a set of training materials that suits themselves, their own teaching style and the equipment available.

Student materials can be printed or digital. Alongside the textbook, there may be a task book as well as various differentiating materials. Students are also offered online assignments,

some of which are suitable not only for the classroom situation but also for self-study and to be utilised while real business cases are under innovation and development.

Teacher materials have evolved into extensive entities that can include audio, video, and animation, as well as in some cases game elements. Digitalisation in particular has made it possible to start learning new things in an even more diverse way. From teachers point of view training materials also provide some tools for planning teaching, taking exams, and evaluating. Assessment and monitoring tools are often integrated into the material, allowing the teacher to monitor students' progress. The accumulated knowledge makes it possible to provide differentiated content for both the less advanced and those who need an additional challenge - and gives teachers time to meet learners. The risk of exclusion can be addressed at an early stage.

With new learning environments, the learning process can be tracked for years as the student's learning history follows the student as his or her studies progress. Every VET organisation has their own learning environment where to take the training materials created for the EQF level 4 and 6 or commercial programs. DIHUB training materials are available for all learners through DIHUB platform (dihub.cloud).

2.3. Advanced training materials by major cloud providers

Organizations need individuals with cloud skills to help transform their business. Different cloud providers like AWS, Google Cloud, Microsoft Azure etc. have their own licensed learning paths leading to a certification. The first courses are usually free of charge and the more advanced courses are subject to a fee.

This way a learner can build and validate their skills so they can get more out of the cloud. The content is created by each cloud providers experts and updated regularly so learner can keep their cloud skills fresh.

Cloud providers have both digital and classroom training. Digital training allow to learn online at ones' own pace. With classroom training, you can learn best practices from an expert instructor. In addition to in-person classes, virtual training lets you take courses from anywhere. Whether you are just starting out, building on existing IT skills, or sharpening your cloud knowledge, cloud providers and Certification can help you be more effective and do more in the cloud.

Most VET-providers utilise the basic courses as a part of their training programs and some offer also participation to licenced courses by cloud providers.

3. Training materials for the 21 days pilot training

The following training materials have been created and utilized for the 21 days pilot training by all partners.

Training materials for 21 days DiHUB training	
Topic	**Material**
Serverless/Cloud Architecture	
Azure fundamentals	https://docs.microsoft.com/en-us/learn/paths/az-900-describe-cloud-concepts/
Google Cloud training	https://cloud.google.com/training/
Amazon AWS Funamentals	https://aws.amazon.com/getting-started/fundamentals-core-concepts/
Cloud storage comparison (AWS vs Google Cloud vs Microsoft Azure)	https://hackernoon.com/examining-cloud-backup-solutions-aws-vs-azure-vs-google-cloud-kq6f944v1
Private cloud setup "NextCloud"	https://www.techrepublic.com/article/how-to-install-nextcloud-20-on-ubuntu-server-
Artificial intelligence and Machine learning	
Teachable machine tutorials	https://teachablemachine.withgoogle.com/train
Dihub Online learning materials	https://courses.dihub.cloud/course/introduction-to-artificial-intelligence/
Programming	
Python Programming MOOC	https://programming-22.mooc.fi/
DevOPS	
Docker fundamentals	https://devopswithdocker.com/part-1
SCRUM methodology	https://scrumguides.org/scrum-guide.html
Service Design	https://www.interaction-design.org/literature/topics/service-design
Concept of modern teamwork and co-working	https://www.emergeinteractive.com/insights/detail/why-co-creation-is-the-new-collaboration/
Service Design and ITIL	http://courses.dihub.cloud/course/service-design/
Google Cloud Platform fundamentals	
Google Training platform	https://cloud.google.com/training

Microsoft Azure fundamentals	
Azure Training platform	https://docs.microsoft.com/en-us/learn/azure/
Azure AZ-900 training	https://docs.microsoft.com/en-us/learn/paths/az-900-describe-cloud-concepts/
Google Workspace fundamentals	
Google Cloud training platform	https://workspace.google.com/training/
Google Workspace security checklist	https://support.google.com/a/answer/9211704?hl=en&ref_topic=7559287
M365/O365 fundamentals	
Microsoft 365 training	https://support.microsoft.com/en-us/training
Microsoft 365 security checklist	https://docs.microsoft.com/en-us/microsoft-365/admin/security-and-compliance/secure-your-business-data?view=o365-worldwide
File syncing with OneDrive	https://support.microsoft.com/en-us/office/sync-files-with-onedrive-in-windows-615391c4-2bd3-4aae-a42a-858262e42a49#bkmk_install
Security	
Google Workspace security checklist	https://support.google.com/a/answer/9211704?hl=en&ref_topic=7559287
Microsoft 365 security checklist	https://docs.microsoft.com/en-us/microsoft-365/admin/security-and-compliance/secure-your-business-data?view=o365-worldwide
Linux server security checklist	https://medium.com/@narendirand11/security-checklist-for-linux-server-f2baa1319223

4. Training materials for the final joint DIHUB curriculum

The joint DIHUB curriculum has been designed for the four cloud specialist job roles defined in the DACUM analysis report by Algebra University College. The process of developing the curriculum for the level of EQF 6 is explained in Aunimo et al. (2022). The European qualifications framework (EQF) is used, and the skills are mapped into the European Skills, Competences, Qualifications and Occupations framework (ESCO). DIHUB curriculum is defined for EQF6 and EQF4 with measuring through ECVET (secondary education) and ECTS (higher education) credit points.

The DIHUB curriculum includes the best practices and describes skills relevant to cloud job roles. The skills relevant for cloud specialists at the level EQF 6 are depicted in figure 1. The curriculum may serve educational institutions or individuals looking for way to enter into or to improve cloud technology skills.
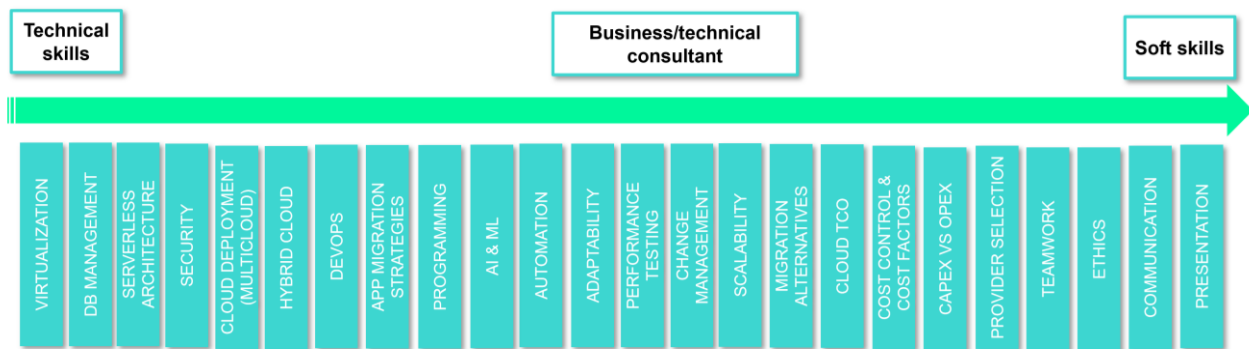
Figure 1: Cloud job roles and the relevant technical, business and soft skills for EQF 6.

A cloud computing specialist may be divided into several separate job roles. At the EQF 6 level, there are four roles: administrator, mogration expert, strategist and monetization expert and an application developer. The latter is called Cloud service/content creator in this document. At the level EQF 4, there is only one role: the cloud specialist in the IT-support.

The joint DIHUB curriculum covers following cloud jobs relevant across cloud landscape:

- Cloud manger/administrator

- Cloud migration expert

- Cloud strategist and monetization expert

- Cloud service/content creator

- IT-support cloud specialist (EQF 4)

All are empowered by selected technical, business and softs skills. The five different job roles are explained. Firstly there has been descibed the job role for the EQF level 4 and subsequently the four job roles for the level 6.

Detailed training materials for the final curricula EQF level 4 and EQF level 6 have been introduced as a part of the course descriptions in the project deliverable called "Created Service package and the training program". There has been described also the grading principles as well as assessment criterias for each course.