



Leveraging AI and Verifiable Credentials for Dynamic TVET Systems in Africa and Beyond

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Definitions related to this presentation

Generative AI

Generative AI is a subset of artificial intelligence that uses models to **create original content** such as text, images, videos, or other forms of data **in response to user prompts**.

Wikipedia

TVET

TVET stands for Technical and Vocational Education and Training, which encompasses education and training programs that equip individuals with **practical skills and knowledge for specific trades and professions**.


UNESCO-UNEVOC

Microcredentials

"the certification of the **learning outcomes of short-term learning experiences**, which offer a flexible and targeted way to help people develop the knowledge, skills, and competences they need for their **personal and professional development**"

European Commission

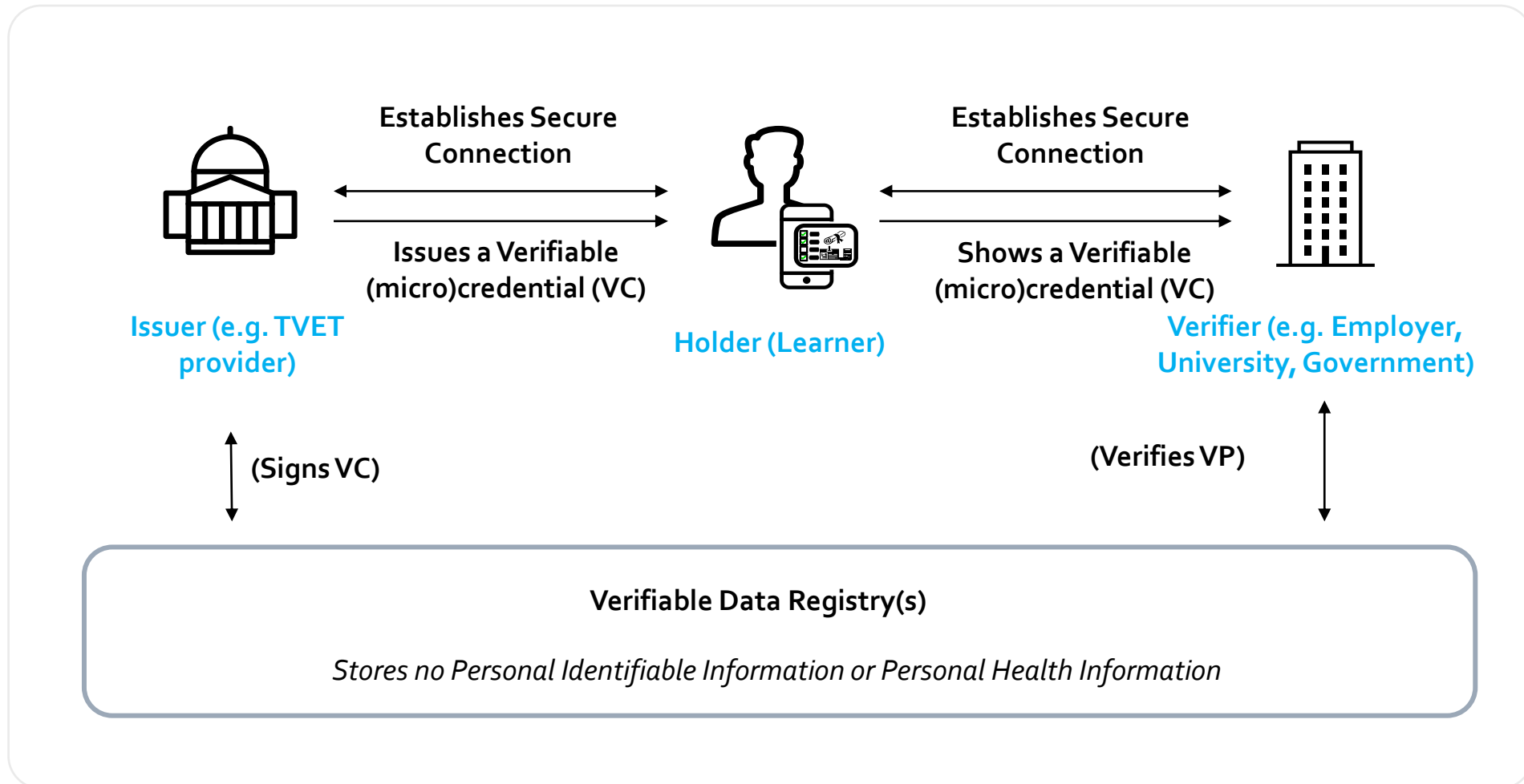




Differences between traditional certificates and microcredentials

Area	Traditional Certificates	Microcredentials
Format and Delivery	Physical, paper-based format	Digital, often earned through online platforms
Scope and Focus	Broad range of subjects, longer time commitment	Specific skills or competencies, shorter duration
Recognition and Portability	Well-recognized and widely accepted by employers and educational institutions	Emerging recognition, stackable for comprehensive skill sets

Understanding the main advantage of verifiable (micro)credentials





Short introduction into the technical terminology

Open Badges 3.0

Open Badges 3.0 is special because it aligns with the W3C Verifiable Credentials data model, enhancing security, transparency, and interoperability across different systems and platforms.

[Verifiable Credentials Data Model v2.0](#)

Digital Wallets

The Open Wallet initiative is crucial because it promotes global interoperability and security for digital credentials, ensuring that microcredentials are verifiable, portable, and trusted across different systems and borders

[OpenWallet Foundation – Linux Foundation Project](#)

Platforms & Taxonomies

Platforms that issue and claim microcredentials, along with their underlying taxonomies, are essential for ensuring the credibility, interoperability, and transparency of these credentials, thereby enhancing their value and recognition in the job market.

→ Simone is going deeper here, I will just show some examples.



WHAT'S A
BADGE
REALLY
WORTH?

VALUE
CREDENTIAL

=

ISSUER
VALUE

+

MEANING
VALUE

+

ENDORSEMENT
VALUE

+

JOURNEY
VALUE

)



VIEWER
PERCEPTION



INSTITUTION



COMPANY



GROUP



INDIVIDUAL



ATTRIBUTE



KNOWLEDGE



ACHIEVEMENT



COMPETENCE



PARTICIPATION



INSTITUTION



COMPANY



GROUP



INDIVIDUAL



PATHWAY



MAPPING



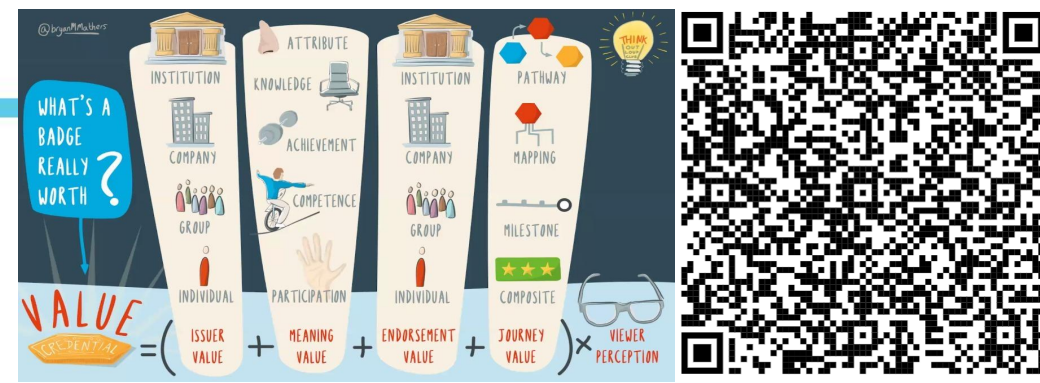
MILESTONE



COMPOSITE



African Context & Policy Drivers



The [ACQF Final Report](#) highlights several key findings:

Diverse Educational Systems: Africa's educational landscape is **highly diverse**, with varying levels of development and implementation of national and regional qualifications frameworks.

Need for Harmonization: There is a significant need to harmonize qualifications to ensure they are **recognized across borders**, facilitating better mobility for students and workers.

Microcredentials: The study emphasizes the growing importance of microcredentials in addressing skills gaps and **providing flexible learning pathways**.

Capacity Building: Strengthening institutional capacities and developing **robust quality assurance mechanisms** are crucial for the successful implementation of the ACQF.

To advance the goals of the ACQF, the following areas require further attention:

Policy Development: Continued development **and alignment of policies** at national and regional levels to support the ACQF framework.

Stakeholder Engagement: Increased **collaboration with stakeholders**, including governments, educational institutions, and industry partners, to ensure broad-based support and implementation.

Capacity Building: Ongoing efforts to **build the capacities** of institutions and individuals involved in the qualifications framework.

Awareness and Advocacy: Raising awareness about the benefits of the ACQF and **advocating for its adoption** across the continent.

Example Education & Training: New Zealand



Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

[Contact us](#)[About us](#)[Login](#)

Mātauranga, paerewa, pūkenga-whāiti
Qualifications, credentials and standards ▾

NCEA me te tohu kura tuarua
NCEA and secondary ▾

Māori
Māori ▾

Ngā iwi o Te Moana-nui-a-Kiwa
Pasifika ▾

Mātauranga matua
Tertiary ▾

Tuawhenua
International ▾

Mō mātou
About us ▾

[Home](#) > [Tertiary](#) > [Approval, accreditation and registration](#) >

Micro-credential listing, approval, and accreditation

Information about applying for listing, approval, and accreditation of NZQCF micro-credentials

About micro-credentials

Micro-credentials are small, stand-alone awards with set learning outcomes. They're part of Aotearoa's education and training system.

Micro-credentials recognise learners' skills, experience or knowledge, while meeting demand from employers, industry and communities.

Micro-credentials that we've quality assured are:

Search by region, type, category, code of practice and word:

Region

Auckland ▾

Type

All Types ▾

Category*

All Types

Course Owner

Govt. Training Establishment

Industry Training Organisation

NZ Institute of Skills and Technology

Private Training Establishment

School

University

Wananga

Workforce Development Council

About provider search function

*NZQA places the performance of non-university providers into one of the following four provider categories:

- Category 1: two Highly Confident judgements, or a Highly Confident judgement for educational performance and a Highly Confident/Confident judgement for self-assessment capability
- Category 2: two Confident judgements, or a Highly Confident judgement in self-assessment and a Confident judgment in educational performance
- Category 3: any Not Yet Confident judgement
- Category 4: any Not Confident judgement.

↓ [The micro-credential rules](#)

↓ [Guidelines for micro-credential listing, approval and](#)



Example Higher Ed: ATU

COURSE SEARCH

TOPICS

- ☐ Business
- ☐ Computing
- ☐ Construction
- ☐ Engineering
- ☐ Environmental
- ☐ Health and Safety
- ☐ Hospitality
- ☐ International
- ☐ Lean Six Sigma OpEx Academy
- ☐ Maths
- ☐ Outreach
- ☐ Preparing for university
- ☐ Quality
- ☐ Research
- ☐ Science
- ☐ Staff training



Sláinte agus Sábháilteacht
Health and Safety Authority



Ollscoil
Teicneolaíochta
an Atlantaigh
Atlantic
Technological
University

Workplace Safety, Health and Welfare Induction

The following course is about workplace safety, health and welfare. Unit 1 and 2 are compulsory, you and/or your employer can...

8 Weeks 3 hrs per week

View

Introduction to Lean Construction



Introduction to lean construction (HE4.0)

The objective of the course is to introduce the learner to the lean concepts and how these concepts can help improve the productivity o...



Lean Sigma White Belt (Oct- Nov 2024)

Welcome to the ATU Sligo White Belt - Introduction to Lean Sigma Quality. The first week of the White Belt course...

6 Weeks 3 hrs per week

View



Yellow_Belt

Yellow belt hosted by ATU Sligo. This course is not open to the public. This is a specialised in-company training...



Medical device manufacturing

This is an ATU Sligo course developed for campus students that has been opened to the public on a pilot basis. Once you register on...

0 Weeks 0 hrs per week

View



C Programming 101

A free course by Seán Mullery introducing you to the basics of the C programming language. You can enroll yourself on this course using...

From MOOCs to Micro-Credentials to Major Awards:

Your learning doesn't stop here. Stack your achievements and progress toward recognised qualifications.



Example: World Steel Association



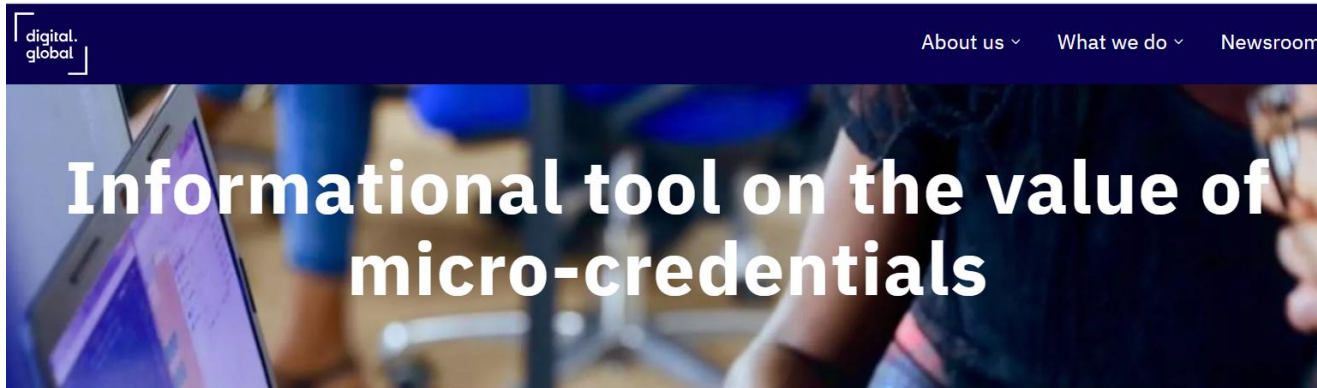
Occupation → Functional Analysis → Skills, Aptitude and knowledge → Evidence and Learning Outcomes → Learning Solution, Micro-credentials, among others

↓
Proficiency Levels (1-4)

↓
European Qualification Framework (1-8)

Skill Definition	Proficiency Level	Learning Outcomes	European Qualification Framework		Learning solution Directory						
Manage Budget Gather information and prepare budgets for the organization to support short- and long-term business plans. Engage colleagues and stakeholders in the process. Submit them to decision-makers and agree final budgets to be implemented. Monitoring budgetary performance, taking corrective actions when required. Propose revisions and provide reports to decision-makers, including identifying potential fraud is necessary.	1		Category	EQF Level							
	2	Negotiate the proposed budgets with decision-makers to agree final budgets	Practical	5				✓		✓	✓
		Take corrective action when required to manage budgets	Practical	5			✓		✓		
		Produce budget proposals based on your evaluation of the information gathered	Cognitive	5					✓	✓	
	3	How to discuss, negotiate and confirm a budget with those with budgetary responsibility and the key factors that should be covered	Cognitive	5		✓	✓	✓			✓
		The main causes of budget variances, how to identify them and the different types of corrective action.	Factual	2	✓						
	4	Your organisation's key performance indicators (KPIs)	Factual	2	✓						

Example: Gig Economy

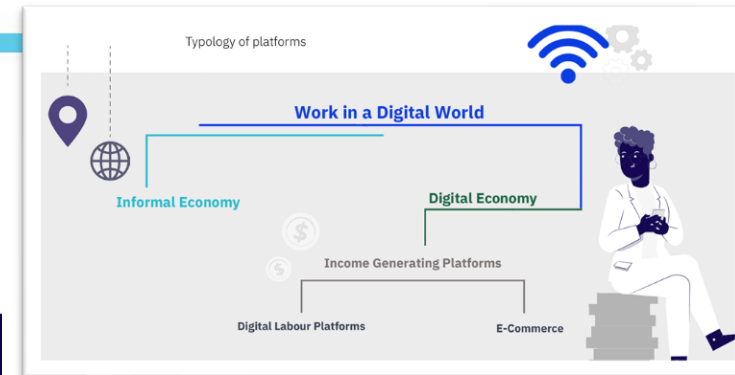


Home > Informational tool on the value of micro-credentials

The role of micro-credentials in improving employability

Basic orientation for gig workers and TVET-Learners

In a world where digital labour platforms are becoming increasingly prevalent and more people are finding work in the gig economy, micro-credentials offer a valuable opportunity to stand out in a competitive job market. By focusing on specific skills and knowledge, micro-credentials provide a targeted and cost-effective way to enhance your career prospects and increase your earning potential in the gig economy. But what are micro-credentials? And how do they benefit you?

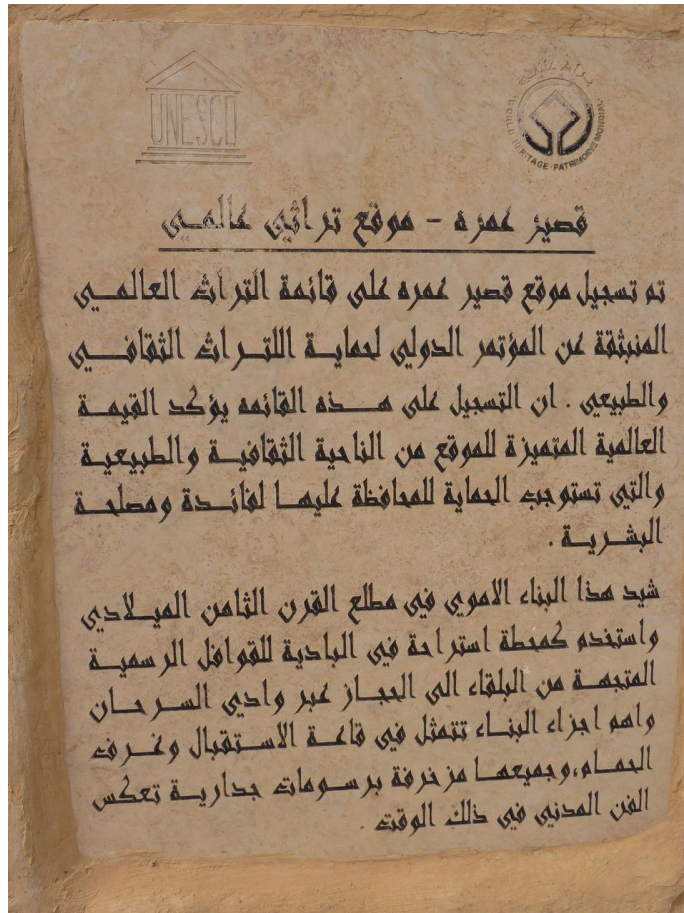


Learning for platform-based gig work: Exploring the value of micro and digital credentials

Authored by Skills Group and commissioned by Sector Project Technical Vocational Educational and Training and Gig Economy Initiative of Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH



AI-enhanced recognition of credentials and prior learning



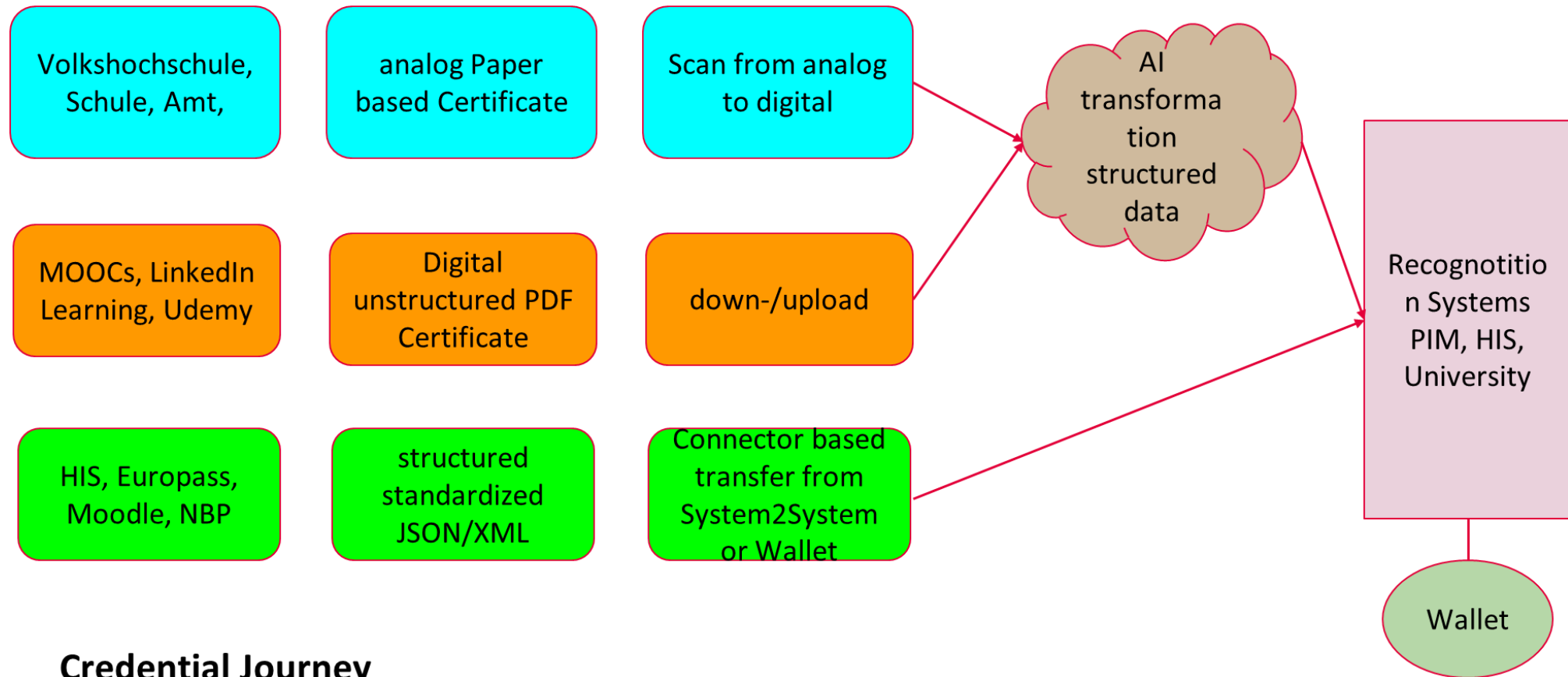
Modul: Machine Vision

Niveau	Bachelor	Kürzel	MaVis
Modulname englisch	Machine Vision		
Modulverantwortliche	Ralph Hänsel		
Fachbereich	Elektrotechnik und Informatik		
Studiengang	(Nicht festgelegt)		
Verpflichtungsgrad	(Nicht festgelegt)	ECTS-Leistungspunkte	5
Fachsemester	4	Semesterwochenstunden	4
Dauer in Semestern	1	Arbeitsaufwand in Stunden	150
Angebotshäufigkeit	SoSe	Präsenzstunden	60
Lehrsprache	Deutsch	Selbststudiumsstunden	90

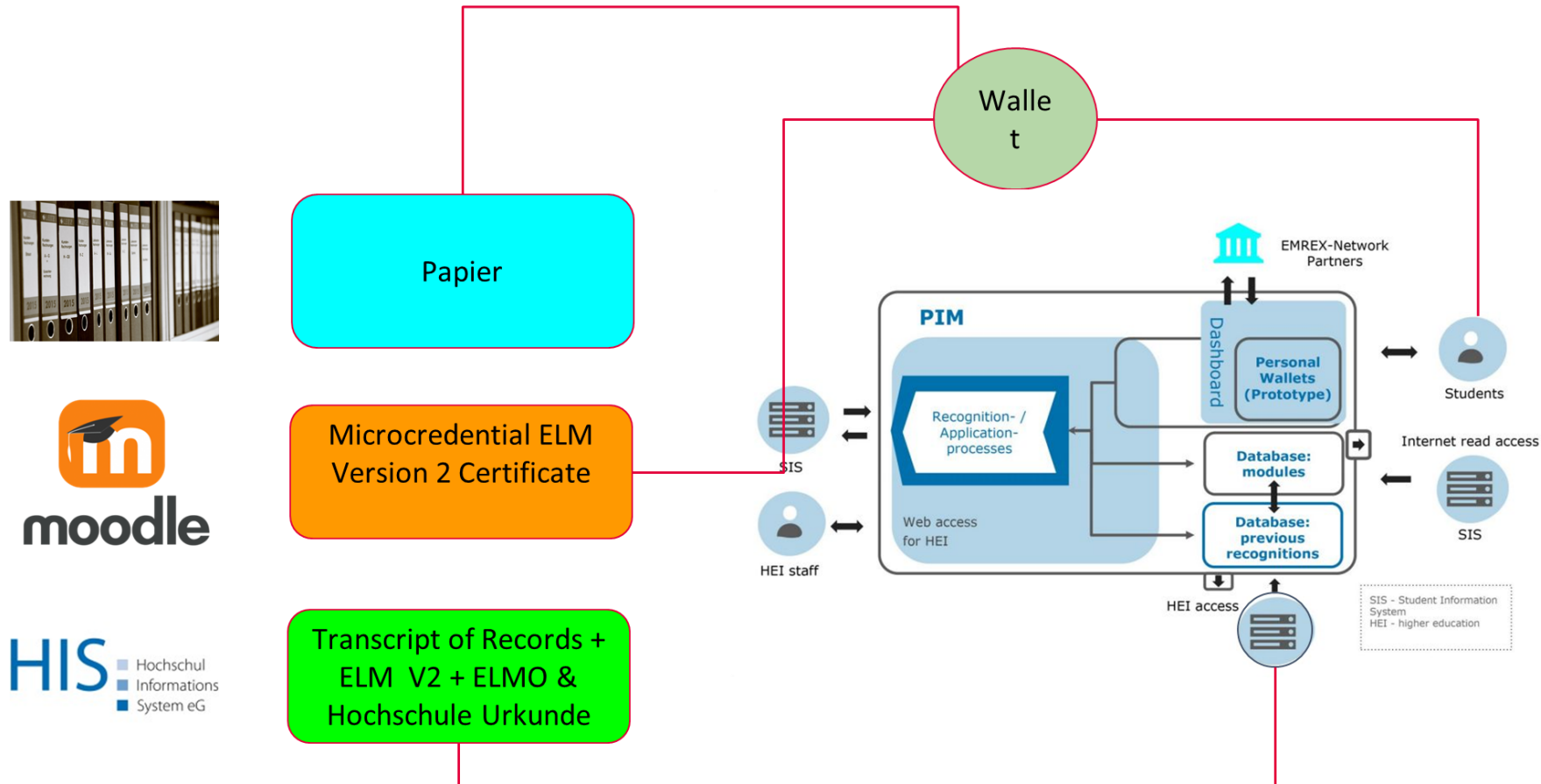
Der folgende Abschnitt ist nur ausgefüllt, wenn es genau eine modulabschließende Prüfung gibt.

Prüfungsleistung	Portfolio-Prüfung	Prüfungsprache	Deutsch
Dauer PL in Minuten		Bewertungssystem PL	Drittelnoten
Lernergebnisse	Die Studierenden kennen folgende Bildverarbeitungsmethoden und können diese unter Verwendung gängiger Frameworks anwenden. <ul style="list-style-type: none">• Bildgewinnung<ul style="list-style-type: none">• Modulationsübertragungsfunktion (Schärfe)• Bestimmung der inneren und äußeren Kalibrierungsparameter• Objektdetektion & ML Verfahren zur Segmentierung<ul style="list-style-type: none">• Objektdetektion mit klassischen ML Verfahren (HOG+SVM)• Objektdetektion mit Deep-Learning Verfahren (Convolutional Neuronal Networks)• Entfernungsschätzung<ul style="list-style-type: none">• Objekttracking (Kalman, Partikel Filter, Optischer Fluss)• 3D Rekonstruktion• Deep-Learning basierte Entfernungsschätzung		

Example Higher Ed: TH Lübeck's AI Applications



Example Higher Ed: TH Lübeck's alignment



The role of eAssessment in TVET and microcredentials

A promotional poster for the e-Assessment Awards 2025. The background is a dark purple with a faint, glowing starburst pattern. The text is white and yellow. At the top left is a starburst icon. The main title is 'e-Assessment Awards 2025'. Below it is the ICoBC Award Category: 'MOST INNOVATIVE USE OF DIGITAL BADGES IN ASSESSMENT'. A paragraph describes the award: 'Recognising organisations, teams, or individuals excelling in integrating digital badges into assessment systems. This award celebrates best practices in using micro-credentials to recognise skills and competencies with accessible, verifiable solutions.' At the bottom left is a yellow button that says 'Enter Now'. At the bottom right is the ICoBC logo, which consists of a stylized 'e' inside a circle, followed by the text 'ICoBC International Council on Badges & Credentials'.

- 1. Efficiency and Scalability:** AI can process large volumes of assessments quickly and accurately (tamper and corruption proof), making it possible to issue microcredentials to a vast number of learners simultaneously. This is crucial for addressing the high demand for skilled workers in various sectors across Africa .
- 2. Personalized Learning and Assessment:** AI can tailor assessments to individual learners' needs, providing personalized feedback and adaptive learning pathways – as well as translate the outcome to a given context. This ensures that each learner's unique skills and competencies are accurately recognized and validated .
- 3. Cost-Effectiveness:** Combining eLearning (e.g. MOOCs) AI-enhanced eAssessment reduces the need for extensive human resources and infrastructure, lowering the overall costs associated with traditional learning and assessment methods. This makes it a sustainable option for widespread adoption in the African context.

Employability on the example of LinkedIn: informal, non-formal and formal data points

The image is a collage of four screenshots from LinkedIn and LinkedIn Learning, illustrating various data points related to employability, categorized into informal, non-formal, and formal data points.

Skills (Informal Data Points):

- Skills:** All, Industry Knowledge, Tools & Technologies, Interpersonal Skills, Languages.
- E-Learning:** Endorsed by Paul Bacsich and 28 others who are highly skilled at this. Endorsed by 6 colleagues at LinkedIn. 66 endorsements.
- Change Management:** Endorsed by Tim Casswell who is highly skilled at this. 15 endorsements.
- English:** 7 experiences across LinkedIn and 4 other companies. EPF Ecole d'Ingénieurs. Programme Committee Member for the European Association of Engineering Schools.
- Show all 9 details →**

Education (Formal Data Points):

- Hochschule Mittweida:** Dipl.-Ing. (FH), Medientechnik. 2002 - 2006. Grade: completed with honors. Activities and societies: Leading the „Music“ section of the TV show called „Propeller“ (1,5 Million potential viewers), work in the Studentenclub e.V., support of the Swan Lake Award (Multimedia-Award) as a lecturer... see more. Responsible project manager of the successful website relaunch of the „BLK Bonn“ with a Typo3 CMS (http://www.gwk-bonn.de).... see more.
- Lernplattform**
- EPF Engineering School:** 2007, Erasmus. 2006 - 2007. Activities and societies: Erasmus. Stock markets and economy, legal affairs, open Systems, French. English.

Licenses & certifications (Formal Data Points):

- Access to Learning - Savvy Enthusiast:** common sense eLearning & training consultants. Issued May 2024. Credential ID e3d7e90663d6b8fdaa5cd34495ab44c90813fc7a. [Show credential](#)
- Open Badges**
- ICoBC Symposium Attendance Award:** International Council on Badges and Credentials [ICoBC]. Issued Dec 2021. [Show credential](#)
- Show all 23 licenses & certifications →**

LinkedIn Learning (Non-formal Data Points):

- Search:** project management
- Contents:** Introduction, Deliver successful projects (1m 22s video), What you should know (2m 40s video), 1. Get to Know Project Management, What is a project? (3m 11s video), What is project management? (3m 5s video), What it takes to be a project manager (2m video), The waterfall project management lifecycle (3m 47s video), The agile project management lifecycle (2m 54s video), How organizational structure affects projects (2m 20s video), How organizational culture affects projects.
- Learners:** 38,693 members like this content · 979,004 people started learning.
- Professional Certifications and Continuing Education Units (CEUs):** National Association of State Boards of Accountancy (NASBA). Continuing Professional Education Credit (CPE): 8.8. Recommended NASBA Field of Study: Business Management & Organization. Sponsor Identification number: 140940. To earn CPE credits, the learner is expected to: Complete all videos and chapter quizzes, Complete the final exam within one year from completing the course. [Show more](#)
- Project Management Institute (PMI):** PDUs/ContactHours: 3.25. LinkedIn Learning has been reviewed and approved by the PMI® Authorized Training Partner Program. This course qualifies for professional development units (PDUs). The PMI Authorized Training Partner logo is a registered mark of the Project Management Institute, Inc. To view the activity and PDU details for this course. [click here](#). [Show more](#)

Summary



Enhanced Recognition: AI-enhanced interoperability (e.g. via middleware (identity), connectors (profession and skill data) and eAssessment integration) could help microcredentials to be more widely **understood, recognized and accepted** across different institutions and employers, facilitating the mobility of learners and workers.

Transparency and Credibility: Given a (legal) framework (by associations or governments) and related accreditation, transparency and credibility in **verifying the authenticity and quality** of microcredentials can be ensured.

Alignment with Industry Needs: Aligning and bundling microcredentials with **industry standards (tools etc.) and requirements**, ensuring that the skills and competencies acquired are relevant and valuable in the job market. Stackability of a variety of credentials can play a significant role here.

IT'S IN MY
WALLET...

...I MEAN
MY PHONE...

...IT JUST
WORKS!



Thank you!

Resources



Connect with me on LinkedIn



At the ICoBC, we are dedicated to cultivating a world where diverse learning pathways are acknowledged, valued, and interconnected.

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