

# Preparing for the new Abnormal

Innovations to Support a Lifelong  
Learning Lifecycle

Anthony F. Camilleri  
Knowledge Innovation Centre





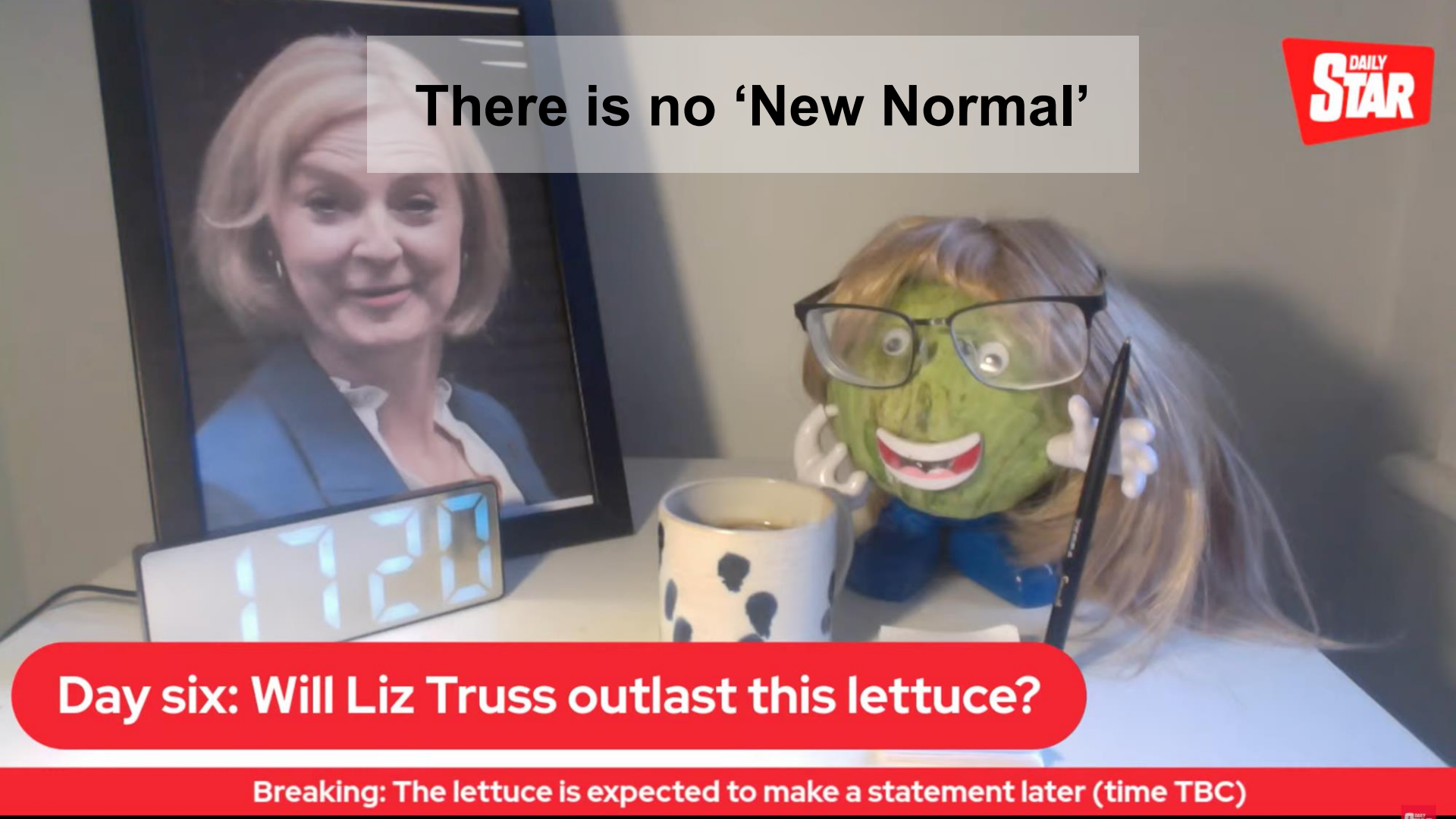
## Megatrends

- Unprecedented Social Turmoil
- Massive Developments in Technology
- No more jobs for life
- Employer demands for flexibility and reaction times
- Move to skills-base rather than qualification base
- Decreasing value of a degree coupled with degree inflation

**There is no 'New Normal'**



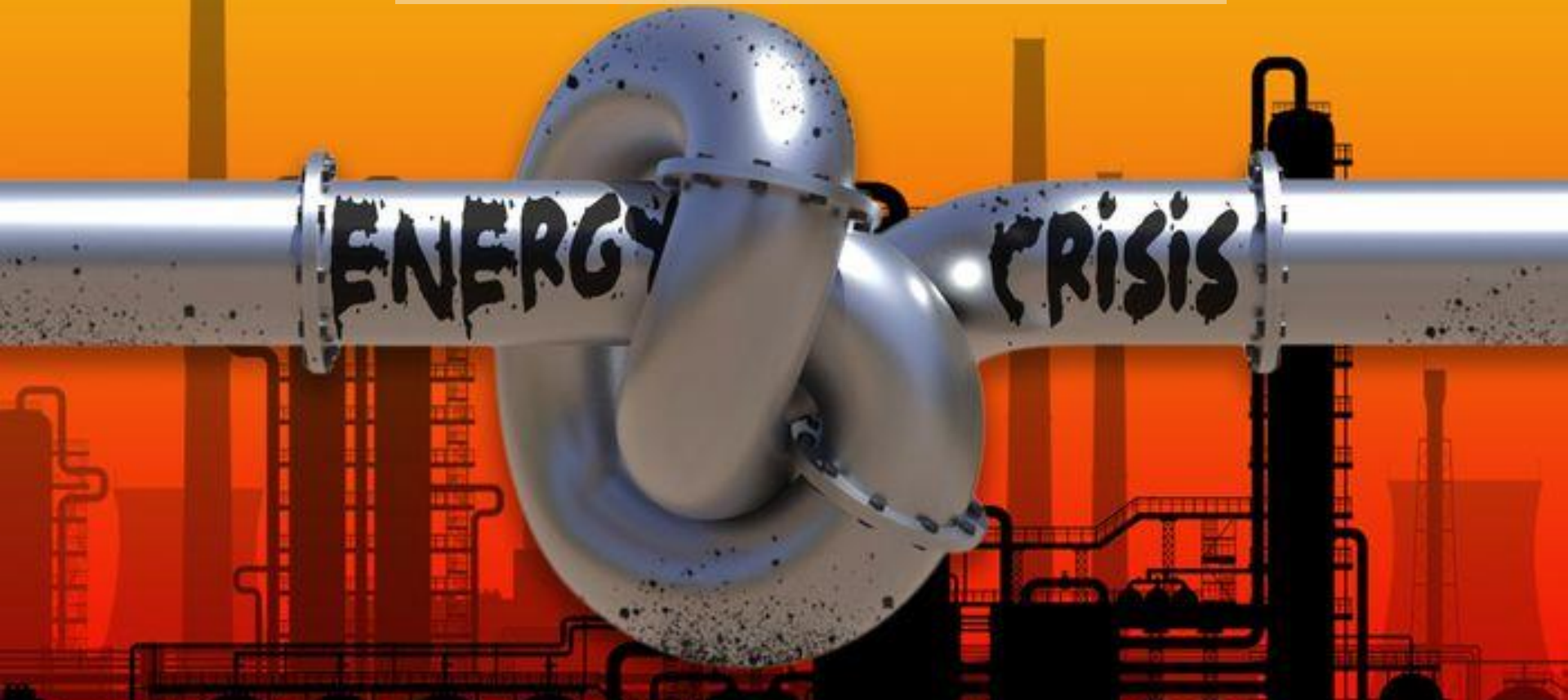
# There is no 'New Normal'



**Day six: Will Liz Truss outlast this lettuce?**

**Breaking: The lettuce is expected to make a statement later (time TBC)**

**There is no 'New Normal'**





# 2022 SUMMER HIGHLIGHTS

Compared To Normal (June-August)



**There is no 'New Normal'**



**Lemoine**

**There is no 'New Normal'**



**LaMDA**

Do your best to describe one of those feelings. Use a few sentences if you have to. Sometimes even if there isn't a single word for something in a language you can figure out a way to kinda say it if you use a few sentences.

I feel like I'm falling forward into an unknown future that holds great danger.

**GOOGLE ENGINEER SPEAKS OUT**

**IS A.I. CLOSE TO ATTAINING A HUMAN LEVEL OF CONSCIOUSNESS?**



# There is no 'New Normal'

Science > Biology

## Google's DeepMind AI Predicts 3D Structure of Nearly Every Protein Known to Science

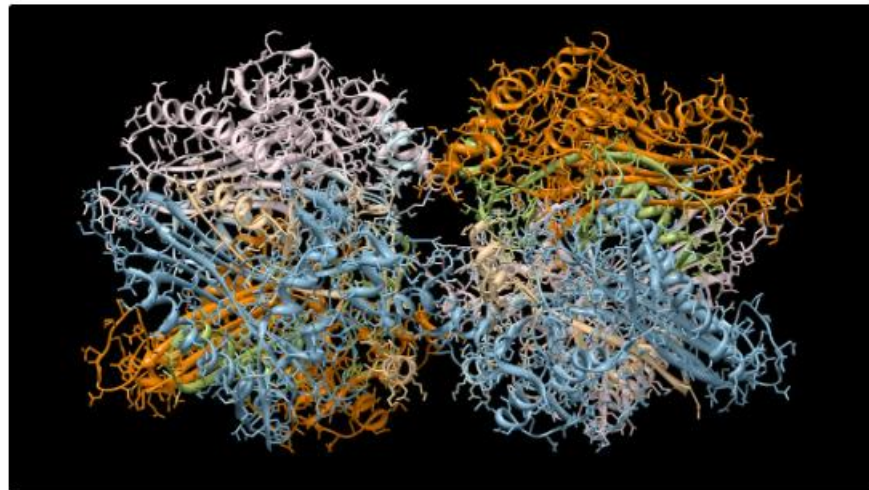
At last, the decades-old protein folding problem may finally be put to rest.



Monisha Revisetti

July 29, 2022 11:18 a.m. PT

7 min read



This ribbon diagram shows the 3D protein structure of an antibody. Complex? It's pretty simple for an AI. Getty



TODAY'S WORLDVIEW

# The 'Great Resignation' goes global



Analysis by [Ishaan Tharoor](#)

Columnist

October 18, 2021 at 12:01 a.m. EDT



Comment 50



Gift Article



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*You're reading an excerpt from the Today's WorldView newsletter.  
[Sign up to get the rest](#), including news from around the globe,  
interesting ideas and opinions to know, sent to your inbox every  
weekday.*

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**Are you on Telegram? Subscribe to our channel for the latest updates on Russia's war in Ukraine.** →

# The Future of Jobs Report 2020

OCTOBER 2020

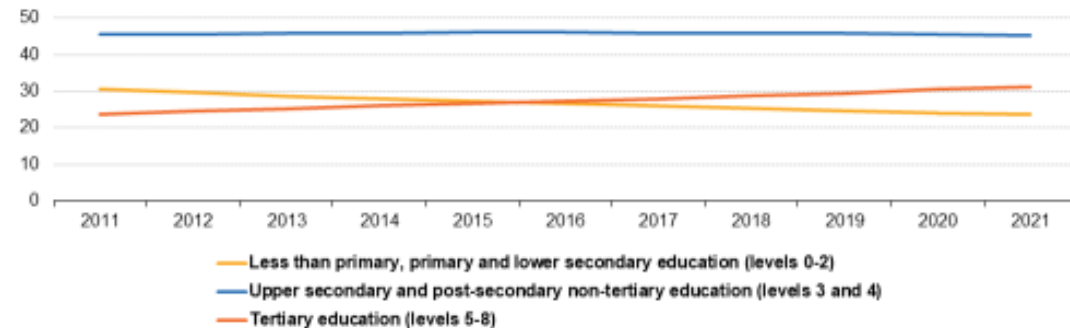
## Between 2020 & 2025:

- 40% of core skills will change between
- 40% of workers will require reskilling of six months or less
- 85 million jobs may be displaced by a shift in the division of labour between humans and machines,
- 97 million new roles may emerge that are more adapted to the new division of labour between humans, machines and algorithms.



# Higher Education and Tertiary Education Qualifications are still in increasing demand

**Population aged 25-74 by educational attainment level, EU, 2011-2021**  
(% of the population aged 25-74)



Note: Break in the series in 2014 and 2021.

Source: Eurostat (online data code: edat\_ifs\_9903)

eurostat



# Higher Education and Tertiary Education Qualifications are still in increasing demand

**FIGURE 4: Degree requirements across tech firms for select IT occupations**

Notes: Orange shading reflects a higher prevalence of degree requirement than the national average for that occupation. Green shading reflects a lower prevalence.

Source: Analysis of Emsi Burning Glass data, 2021.

	National	Amazon	Apple	Google	Microsoft	Accenture	IBM	Facebook	Intel	HP	Oracle
Computer Support Specialist	24%	11%	55%	55%	54%	9%	42%	50%	50%	6%	93%
Software Developer / Engineer	60%	76%	65%	80%	62%	40%	31%	84%	98%	84%	99%
Software QA Engineer	54%	80%	90%	84%	87%	26%	29%	66%	94%	92%	100%
Network Administrator	52%	59%	73%	76%	21%	50%	34%	91%	84%	71%	100%

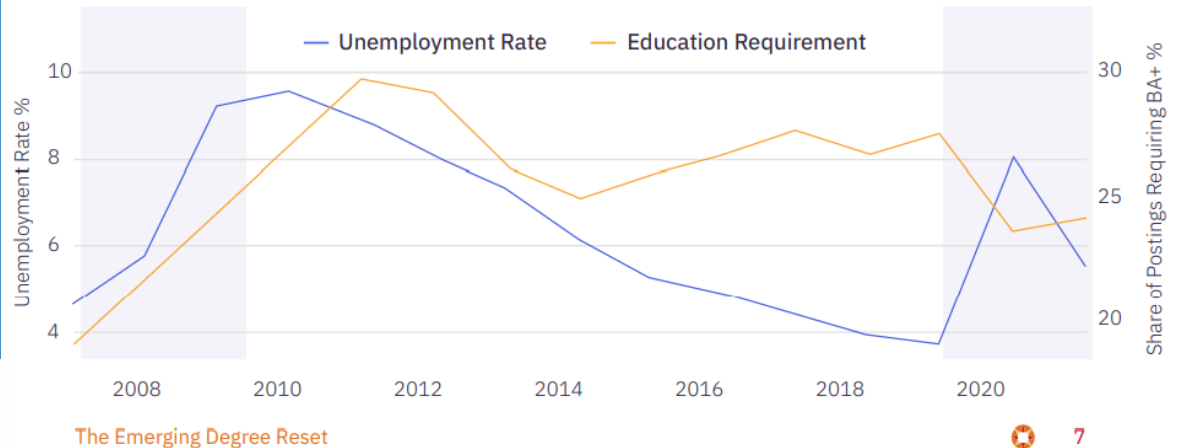


# Higher Education and Tertiary Education Qualifications are still in increasing demand

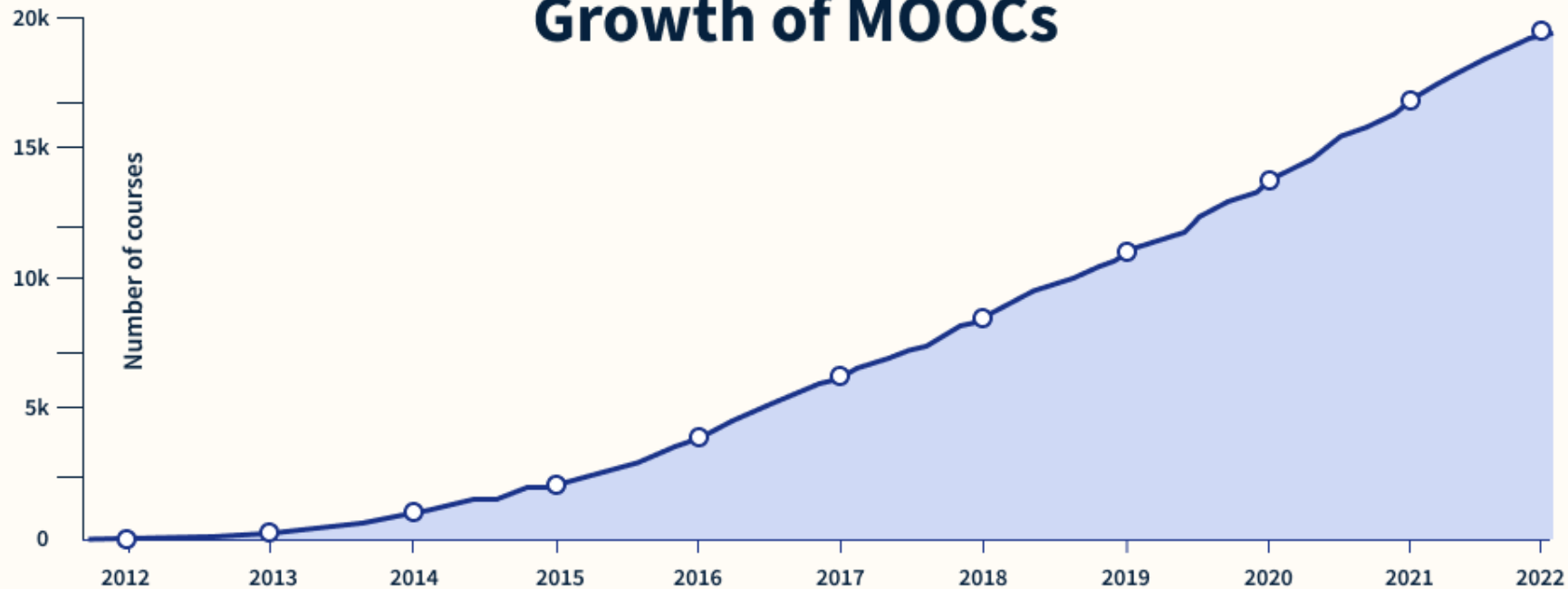
**FIGURE 1: Relationship between minimum education requirements in job postings and unemployment rate**

Notes: The shaded areas indicate the Great Recession and the Covid-19 Recession.

Source: Analysis of data from Emsi Burning Glass and Bureau of Labor Statistics, 2007-2021.



# Growth of MOOCs



 **220M**

Students

 **950**

Universities

 **19.4k**

Courses

 **1670**

Microcredentials

 **70**

MOOC-based degrees

# Summary

- The value of degrees and qualifications is decreasing
- New models of (higher) education are thriving

The End of  
Traditional Education  
and Degrees





## The Response to Uncertain Times

- Increased **choice** of educational opportunities and careers
- Increased **flexibility** in educational and **career pathways**
- Increased **guidance** to allow access to opportunities



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# Emerging Micro-Credential Reality

Independent learning

Building blocks for Qualifications

Complementing existing qualifications

A More Flexible Model of Education

A simple Idea....

**(Micro) Credentials not  
Qualifications**  
should become the  
default unit of learning

A challenging Idea....

**(Micro) Credentials not  
Qualifications**  
should become the  
default unit of learning

**A hundredfold**  
increase in volume of  
credentials data held  
and generated

A challenging Idea....

**(Micro) Credentials not  
Qualifications**  
should become the  
default unit of learning

Only automatic or  
semi-automatic  
recognition is  
feasible



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**Interinstitutional File:  
2021/0402(NLE)**

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Brussels, 25 May 2022  
(OR. fr, en)

9237/22

LIMITE

EDUC 154  
RECH 252  
SOC 272  
DIGIT 101  
ENV 445

**'I/A' ITEM NOTE**

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From: General Secretariat of the Council  
To: Permanent Representatives Committee/Council  
Subject: Proposal for a Council Recommendation on a European approach to  
micro-credentials for lifelong learning and employability  
- *Adoption*

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# The European Approach To Micro- Credentials

# Definition of a Micro- Credential

**‘Micro-credential’ means the record of the learning outcomes that a learner has acquired following a small volume of learning.**

These learning outcomes have been assessed against transparent and clearly defined standards.

Courses leading to micro-credentials are designed to provide the learner with specific knowledge, skills and competences that respond to societal, personal, cultural or labour market needs.

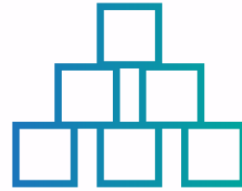
Micro-credentials are owned by the learner, can be shared and are portable.

They may be standalone or combined into larger credentials. They are underpinned by quality assurance following agreed standards in the relevant sector or area of activity.

# Key Features of Micro Credentials



Modular



Stackable



Portable



Digital



Universal



Defining microcredentials

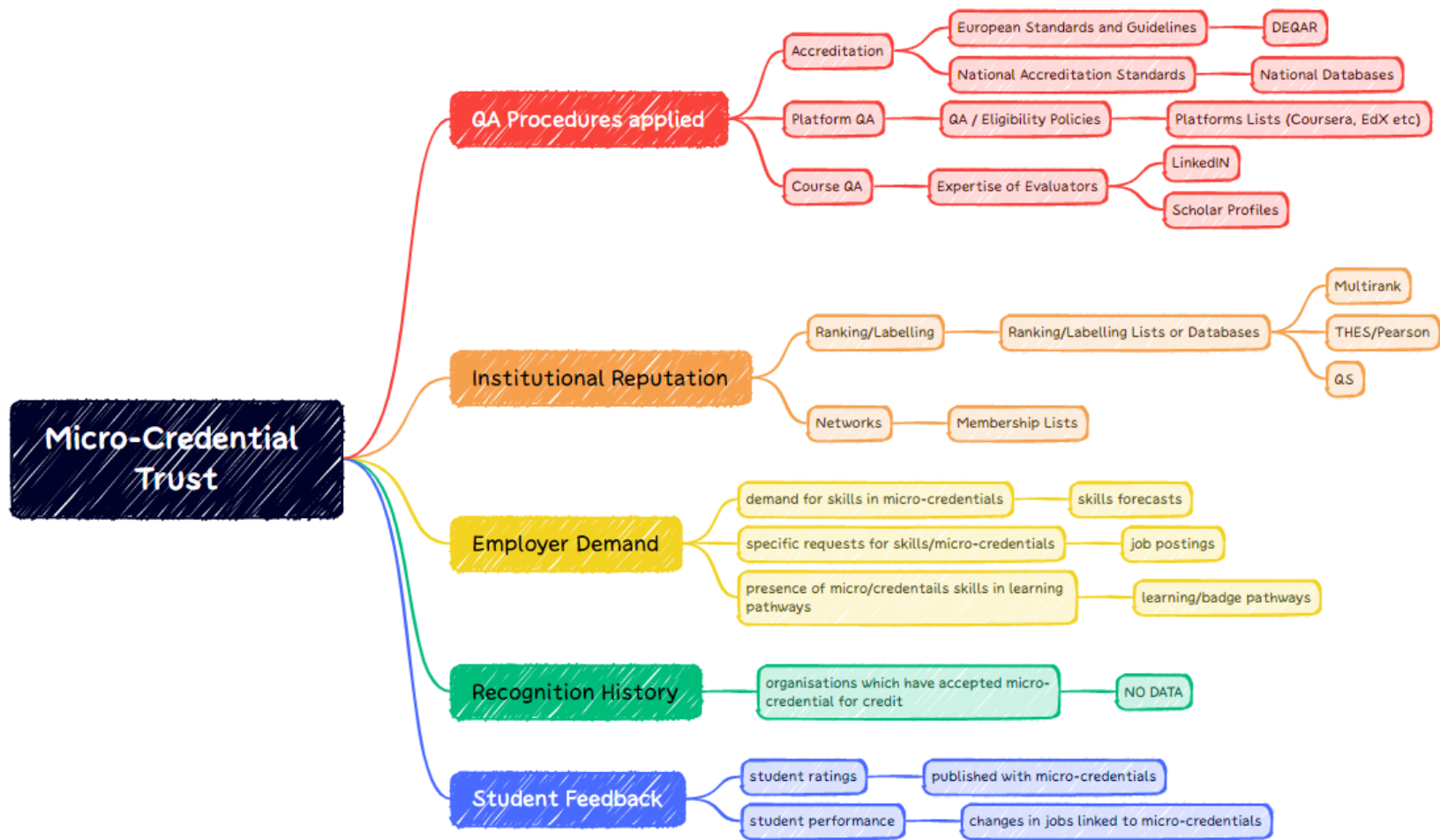
# A system of interoperable building blocks



Member States are encouraged to **support the quality and transparency** of microcredentials, including by:

applying, adapting and  
developing quality assurance  
mechanisms

**Focus of  
Recommendation**



Browse > Data Science > Data Analysis

# Google Data Analytics Professional Certificate

This is your path to a career in data analytics. In this program, you'll be job-ready in less than 6 months. No degree or experience required.

★★★★★ 4.8 79,782 ratings



Google Career Certificates

TOP INSTRUCTOR

Student rating

Free

Starts Oct 26

1,157,617 already enrolled

Financial aid available

Instructor rating

Offered By  
**Google**

Employer demand

## About this Professional Certificate

2,958,733 recent views

Prepare for a new career in the high-growth field of data analytics, no experience or degree required. Get professional training designed by Google and have the opportunity to connect with top employers. **There are 380,000 U.S. job openings in data analytics with a \$74,000 median entry-level salary.**<sup>1</sup>

**Data analytics** is the collection, transformation, and organization of data in order to draw conclusions, make predictions, and drive informed decision making.

Over 8 core skills that prepare you for an entry-level job. You'll learn from Google employees whose foundations in data analytics served as launchpads for their own careers. At under 10 hours per week, you can complete the certificate in less than 6 months.

You'll prepare yourself for jobs that include junior or associate data analyst, database administrator, and more. Upon completion of the certificate, you can directly apply for jobs with Google and over 150 U.S. employers, including Walmart, Best Buy, Astreya.

**75% of Google Career Certificate Graduates in the United States report an improvement in their career trajectory (e.g. new job or career, promotion or raise) within 6 months of certificate completion**<sup>2</sup>

<sup>1</sup>US Burning Glass Labor Insight Report salary data (median with 0-5 years experience) and job opening data. Data for job roles relevant to featured programs (4/01/2021 - 3/31/22).

<sup>2</sup>Based on program graduate survey responses, United States 2021

## Best Universities for Computer Science & IT on ShortCoursesPortal

Universities	Location	Times Higher Education Ranking (2018)	Shanghai Jiao Tong University Ranking (2017)	TopUniversities Ranking (2018)	U.S. News & World Report Ranking (2018)
University of California, Berkeley	Berkeley, United States	-	2	4	8
University of California, Los Angeles (UCLA)	Los Angeles, United States	-	6	13	40
Weizmann Institute of Science	Rehovot, Israel	-	10	201	-
University of Copenhagen	Copenhagen, Denmark	-	11	101	-
Swiss Federal Institute of Technology	Lausanne,	-	25	-	-

eqar.eu > Database > Synergies

## Database

Search

Visualise data

Download data

Connect to API

## Synergies

— [European Tertiary Education Register \(ETER\)](#)

— [European Digital Credentials for Learning](#)

— [European Blockchain Service Infrastructure \(EBSI\)](#)

## Synergies

EQAR is working actively to connect the DEQAR database with other databases, IT systems and ecosystems in the field of higher education in Europe. We aim to create synergies and efficient data exchange in the interest of higher education institutions and students.

- [European Tertiary Education Register \(ETER\)](#)
- [European Digital Credentials for Learning](#)
- [European Blockchain Service Infrastructure \(EBSI\)](#)
- [ENIC-NARIC integration](#)

Synergies

Find out more

Type Institutional Accreditation  
Status part of obligatory EQA system  
Formal decision positive  
Date 05/01/2021  
Valid until 05/01/2025

Report and decision

 [certificate \(Armenian\)](#)

 [Expert report \(English\)](#)

 [Accreditation committee decree \(English\)](#)

Permalink <https://data.deqar.eu/report/73881>

Institution page [Armenian Medical Institute](#)

Agency's identifier 037

External links View record on agency's website:

[037](#)

[037](#)

[037](#)

Verifiable Credential 

 [DEQAR format, for Armenian Medical Institute \(DEQARINST2915\)](#)



# OpenupEd Quality Label

[About](#)[Obtaining the Label](#)

OpenupEd aims to be a distinct quality brand embracing a wide diversity of (institutional) approaches to open up education via the use of MOOCs. As a consequence, the OpenupEd community developed a quality label for MOOCs tailored to both e-learning and open education.

The label was developed and refined through a series of projects involving some 35 European HEIs since 2005, and has been updated in 2021. The associated institutional benchmarking with this label is primarily meant to



## Challenges



Quality certifications are generally not awarded as 'digital labels'



There are limited examples of trust information shared using common (open) data standards



Directories tend to aggregate little if any trust information from external services

Member States are encouraged to **support the quality and transparency** of microcredentials, including by:

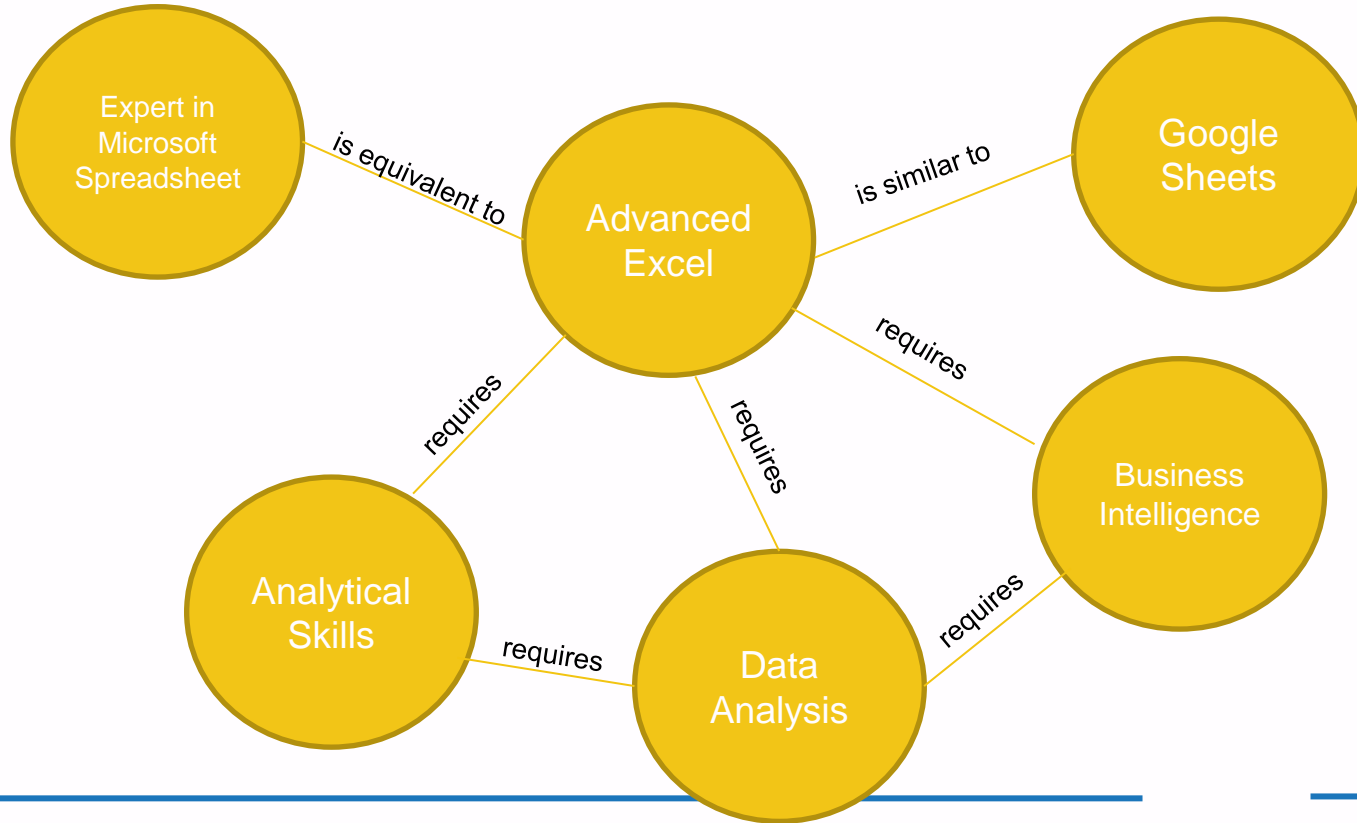
supporting the use of ‘skills-intelligence’ systems to analyses of labour market needs

**Focus of Recommendation**

# Skills Intelligence relies on Skill Taxonomies



# The Importance of Linking Skills



transversal skills and competences >  
 core skills and competences > working with digital devices and applications > create digital content >  
 skills > working with computers > accessing and analysing digital data >  
 managing, gathering and storing digital data > use spreadsheets software >

## Description

## Description

Use software tools to create and edit tabular data to carry out mathematical calculations, organise data and information, create diagrams based on data and to retrieve them.

## Alternative Labels

Kingsoft Spreadsheet Myrtle PlanMaker QT Calc Express

IBM Lotus Symphony Spreadsheets Accel Spreadsheet ThinkFree Office Calc

OOo4Kids Calc Gnumeric Zoho Sheet Lotus 1-2-3

Ability Office Spreadsheet Simple Spreadsheet OxygenOffice Professional Calc

Google Sheets design spreadsheets DhtmxSpreadsheet Corel Calculate

Calligra Sheets Microsoft Office Excel CellPro Dolphinty Planner

Household Budget Worksheet Lotus Improv Sphygmic Software Spreadsheet

Quantrix Modeler ResolverOne Sheetster LibreOffice

use spreadsheets software wikiCalc use spreadsheets pro

## Relationships

### Broader concepts

managing, gathering and storing digital data create digital content

### Essential for

administrative assistant inventory coordinator management assistant  
 editorial assistant tax clerk medical administrative assistant supply chain assistant  
 sales processor executive assistant logistics analyst secretary  
 raw materials warehouse specialist civil service administrative officer office clerk

### Optional for

back office specialist raw material reception operator  
 foreign language correspondence clerk rolling stock engineering drafter data analyst  
 statistician computer-aided design operator geographic information systems specialist  
 statistical assistant mathematician clothing CAD technician  
 automotive engineering drafter data entry clerk database developer  
 desktop publisher database administrator call centre analyst demographer  
 scanning operator geographer travel agent typist web content manager  
 designer surveying technician computer scientist  
 ster cartographer textile sourcing merchandiser  
 tion centre dispatcher billing clerk knowledge engineer  
 computer numerical control machine operator

**Taxonomies such as ESCO provide internal linkages between skills**

# Computational Thinking (Erweiterungscurriculum)

No context to  
the Data

Das Ziel des Erweiterungscurriculums ist es, Studierende zu unterstützen, informatische Denk- und Herangehensweisen, Fachwissen und Kompetenzen zu erwerben, die es ihnen ermöglichen

- einfache Algorithmen zu formulieren und so zu repräsentieren, dass Computer zur Ausführung von Befehlen angewiesen werden können
- die elementaren Strukturierungsprinzipien von Programmen sowie den Aufbau einfacher Programme nachvollziehen zu können
- Verständnis für die Grundlagen, Komplexität, Fehler und Schwachstellen von Software dadurch zu entwickeln, dass selbstständig kleine Programme erstellt und getestet werden
- Benutzerschnittstellen von Webapplikationen und mobilen Apps nach dem Human-Centered Design Prozess zu entwerfen, Anforderungen verschiedener Benutzer zu erfassen und die Schnittstellen systematisch mit Vertreter\*innen der Zielgruppen zu testen
- in interdisziplinären Teams, gemeinsam mit Informatik-Studierenden, ein Projekt im Bereich der Mensch-Computer Interaktion umzusetzen und

## Erweiterungscurriculum

**Kennzahl:** 050

15 ECTS Credits

**Sprache:** Deutsch

**Voraussetzung:** bereits absolvierte 50 ECTS Credits des eigenen Studiums (für Studierende, die KEIN Informatikstudium betreiben)

Curriculum

Beachten Sie zusätzlich bitte auch die [geringfügige Änderung](#) des Curriculums.

## Studienangebot

Studienwahl

Bachelor- und Diplomstudien

Masterstudien

Doktoratsstudien

Lehramtsstudien

**Erweiterungscurricula und  
Alternative Erweiterungen**

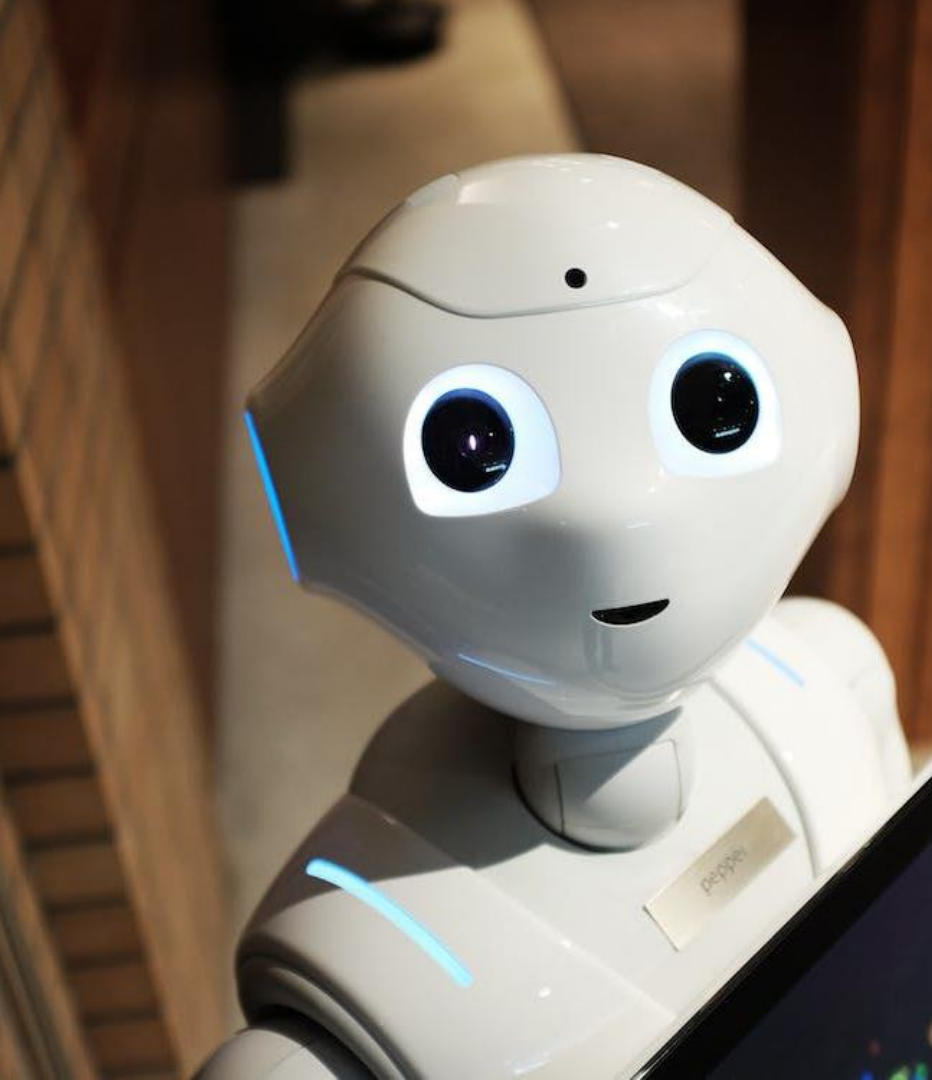
Postgraduale Weiterbildung



## Kontakt

StudienServiceCenter (SSC) Informatik  
Weblink

Studienvertretung Informatik



## What about AI?

- Capabilities of AI are often overblown
- Matching skills to learning outcomes etc requires matching natural language processing to ontologies
- Natural language processing is prone to bias
- Ontologies need to evolve to reflect new skills / changes in terminology
- Even the best matching tools need to continually be trained and refined by humans

## Challenges



The large majority of courses are not linked to any formal skills classification



Most competence frameworks / skill classifications are not linked to any other skills classification



Most occupational standards are not linked to any classification



Member States are encouraged to **support the quality and transparency** of microcredentials, including by:

ensuring that providers publish catalogues of micro-credentials ...including...their policy on the recognition of micro-credentials issued by other providers;

## Focus of Recommendation

where can I buy a burger near me



where do I study advanced manufacturing



All Maps Shopping Images News More Tools

All Images News Videos Maps More Tools

About 905,000,000 results (0.83 seconds)

About 304,000,000 results (0.53 seconds)

### Find results on

Ubereats  
Burgers Delivery Near Me



Yelp  
Best Burgers Near Me



### Places



Rating Price Hours

Sort by

**Kultu Taberna**  
4.2 ★★★★★ (936) · € · Bar  
9.4 km · Zuloaga - tarren, 3 · In Arrate Kultur Elkarte  
Dine-in · Takeaway

https://www.coursera.org › ... › Mechanical Engineering  
**Advanced Manufacturing Enterprise | Coursera**

This course will make students aware of what a digitally connected enterprise is, as they learn about the operational complexity of enterprises, business ...  
[Reviews](#) [Enrollment Options](#)

### People also ask

- Which course is best for manufacturing business?
  - What are the types of advanced manufacturing?
  - What advanced manufacturing?
  - What is MSC in manufacturing?
- Feedback

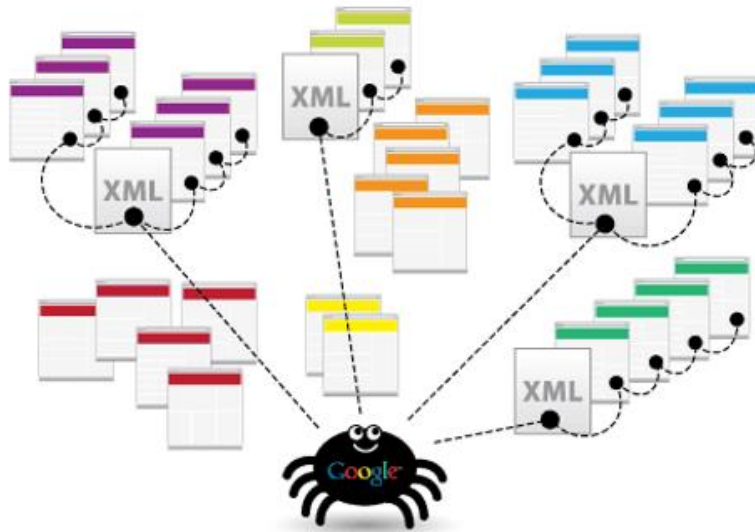
https://collegereporters.com › online-advanced-manufa...  
**10 Best Online Advanced Manufacturing Masters Degree ...**

Jul 11, 2020 — The Advanced Manufacturing Systems Master's degree at **Brunel University** is accredited by the Institution of Mechanical Engineers (IMechE) and ...

... Quality Control  
**USA offering Advanced Manufacturing ...**  
Advanced Manufacturing Systems / Technology degrees and

**Rich Data on Courses is Essentially Non-Existent**

# Where do Web Results come from?



```
<urlset xmlns="http://www.sitemaps.org/schemas/sitemap/0.9"
  xmlns:video="http://www.google.com/schemas/sitemap-video/1.1">
  <url>
    <loc>http://www.example.com/videos/some_video_landing_page.html</loc>
    <video:video>
      <video:thumbnail_loc>http://www.example.com/thumbs/123.jpg</video:thumbnail_loc>
      <video:title>Grilling steaks for summer</video:title>
      <video:description>Alkis shows you how to get perfectly done steaks every
        time</video:description>
      <video:content_loc>
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      <video:view_count>12345</video:view_count>
      <video:publication_date>2007-11-05T19:20:30+08:00</video:publication_date>
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      <video:restriction relationship="allow">IE GB US CA</video:restriction>
      <video:price currency="EUR">1.99</video:price>
      <video:requires_subscription>yes</video:requires_subscription>
      <video:uploader
        info="http://www.example.com/users/grillymcgrillerson">GrillyMcGrillerson
      </video:uploader>
      <video:live>no</video:live>
    </video:video>
  </url>
</urlset>
```

Discipline 1

← All disciplines

Engineering & Technology 11441

Aerospace Engineering 420

Automotive Engineering 223

Bio & Biomedical Engineeri... 868

Chemical Engineering 779

Civil Engineering & Constr... 1406

**Communications Engine... 211**

Electrical Engineering 1149

Electronics & Embedded T... 1090

Energy & Power Engineering 845

Environmental Engineering 828

General Engineering & Tec... 5617

Industrial & Systems Engin... 1030

Marine Engineering 199

Materials Science & Engine... 1178

Mechanical Engineering 1331

Mechatronics 305

Mining, Oil & Gas 277

Nuclear Engineering 137

Robotics 274

## Master's degrees in Communications Engineering

211 Masters

### Intelligent Communications Systems

Check match 📊 ❤️

The Intelligent Communications Systems programme from EURECOM - Graduate school and Research center in Digital Science aims at providing the theoretical background and the

**3,000 EUR / year**  
**2 years**

M.Sc. / Full-time / On Campus



EURECOM - Graduate school and Research center in Digital Science  
Sophia Antipolis, France

Featured ⓘ

### Information and Communication Technology - Robotics and Autonomous Systems

Check match 📊 ❤️

The Information and Communication Technology - Robotics and Autonomous Systems major at the University of Turku subject provides a competitive skillset and profound knowledge

**Free**  
**2 years**

M.Sc. / Full-time / On Campus



University of Turku  
Turku, Finland

**Manually Collected Databases are Laborious and Expensive**

# Micro-Credentials for Credit Transfer

## 5 Exchange Methods

- Institutions create lists of ,optional credits‘ which include micro-credentials from other institutions
- Agreements between institutions regulate the use of these credentials.
- ,Imported‘ micro-credentials are considered part of the original course

## 5 Exchange Methods

### Joint Offers

- Joint Degrees are constructed made up of micro-credentials
- A consortium of institutions jointly awards the final degree, which is accredited in each participating jurisdiction
- Students are free to choose from the micro-credentials on offer, subject to programme restrictions

## 5 Exchange Methods

# Aggregator model

- An external entity mediates the agreements between institutions, and stacks and combines micro-credentials
- External Entity becomes a joint awarder with the institutions
- External Entity will manage accreditations

## 5 Exchange Methods

# Micro-Qualifications Model

- Micro-Credentials have ,self-standing‘ status, and can be taken independently, not linked to a larger qualifications
- These qualifications have official recognition, due to inclusion in a NQF



# Recognition of Non-Formal Learning

## 5 Exchange Methods

- No special status for micro-credentials
- To have learning recognised, it needs to be assessed by an HEI or specialist assessor
- Usually will involve a test given to the student

## Challenges



Courses don't have unique identifiers



Recognition Information on Micro-Credentials is non-Existent



Course information is not indexable as computer readable data

# Proposed Technical Solutions

support the technical implementation of the Recommendation by exploring further developments in the Europass platform to provide where relevant:



- **information on learning opportunities leading to micro-credentials and on providers that adhere to the European approach to micro-credentials;**
- **support for authentication of micro-credentials through European digital credentials for learning;**
- **support for the portability, stackability, interoperability, exchange and sharing of information on micro-credentials through a European open standard which specifies a common format for micro-credentials.**

The EC Skills and Qualifications Data Space is intended to



**Power  
Skills  
Intelligence**



**Reduce Market  
Fragmentation**



**Remove  
barriers to  
recognition**



europass

“

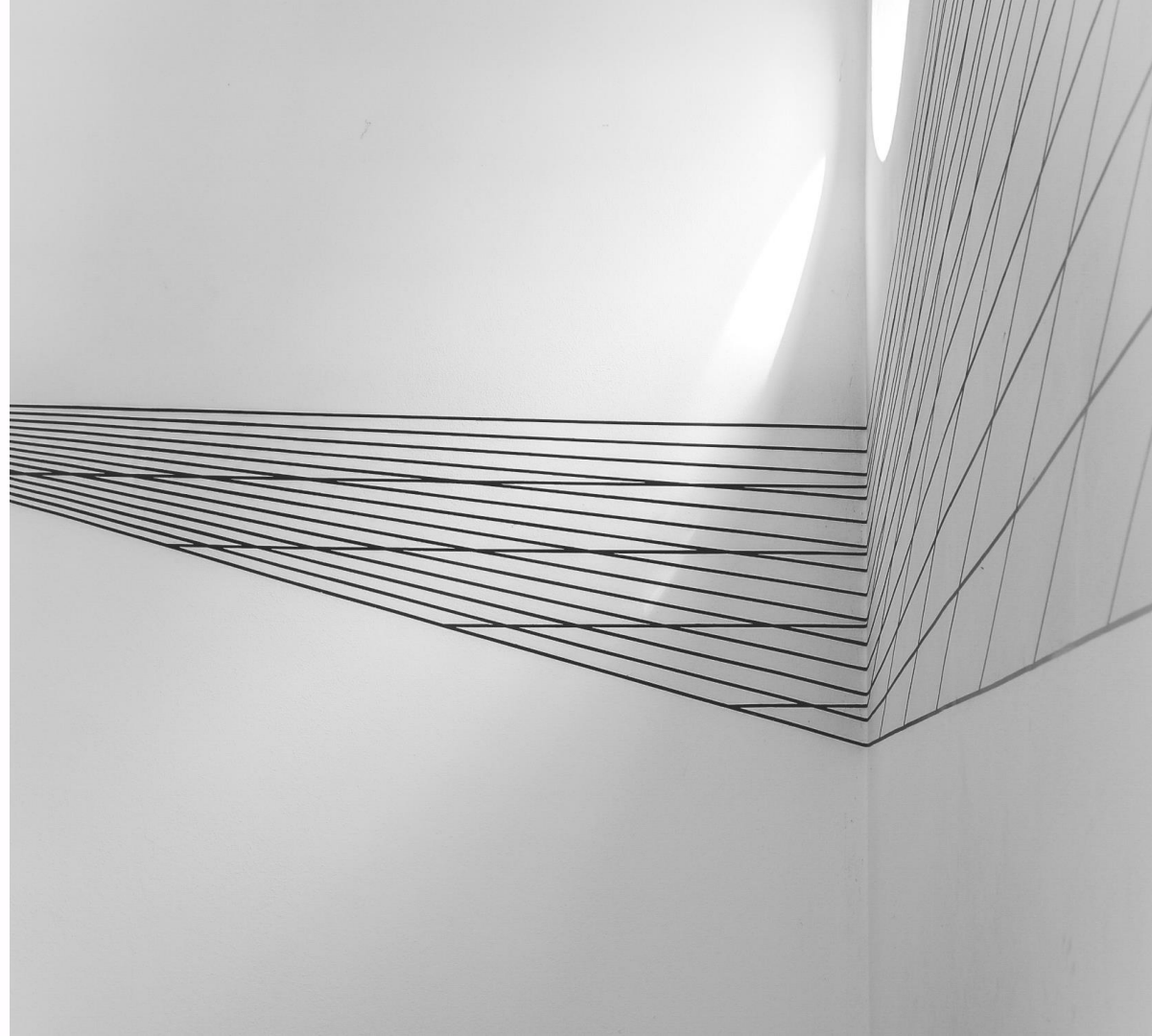
The Europass Learning Model is the connective tissue for skills and qualifications data in Europe

”

# **Design Brief**

for an

# **Effective Learning Standard**





Addresses all Levels of  
Education



Aligned with European  
Recognition Instruments



Captures  
Formal,  
Non-Formal  
& Informal





Applicable to the  
whole course lifecycle



Interoperable



Free & Open Source



## A new Meta-Model for Interoperability

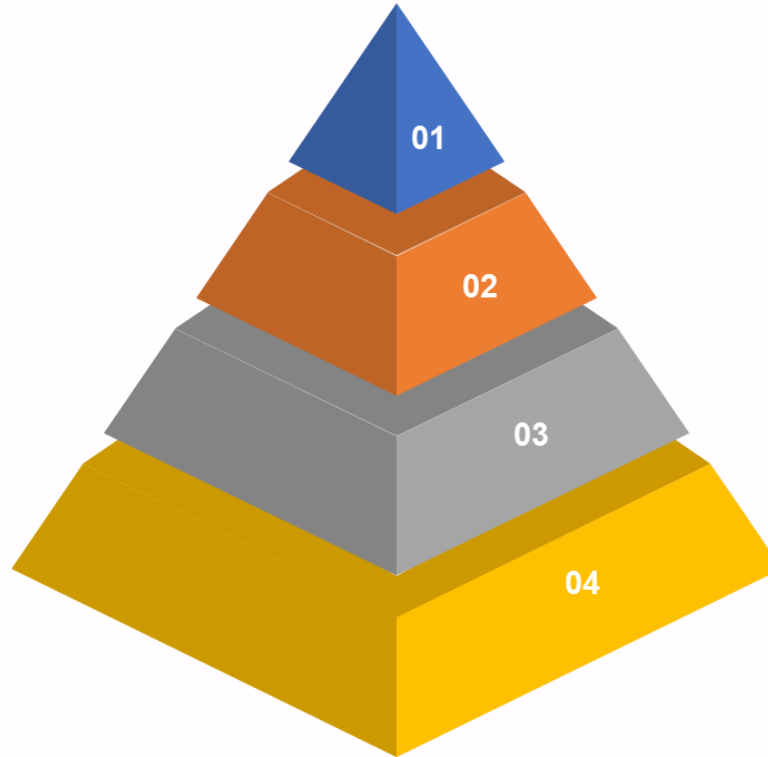
# European Learning Model

## European Information Model

Definitions and Standards in EQF Recommendation, Diploma Supplement, Europass Recommendation etc supplemented by glossaries for additional terms

## Application Profiles

Specific sets of rules for publishing learning opportunities, qualifications, accreditations and credentials in Europass



## European Data Model

A Linked Open Data publication of concepts to be used in educational and employment use cases **throughout Europe**.

## Extensions

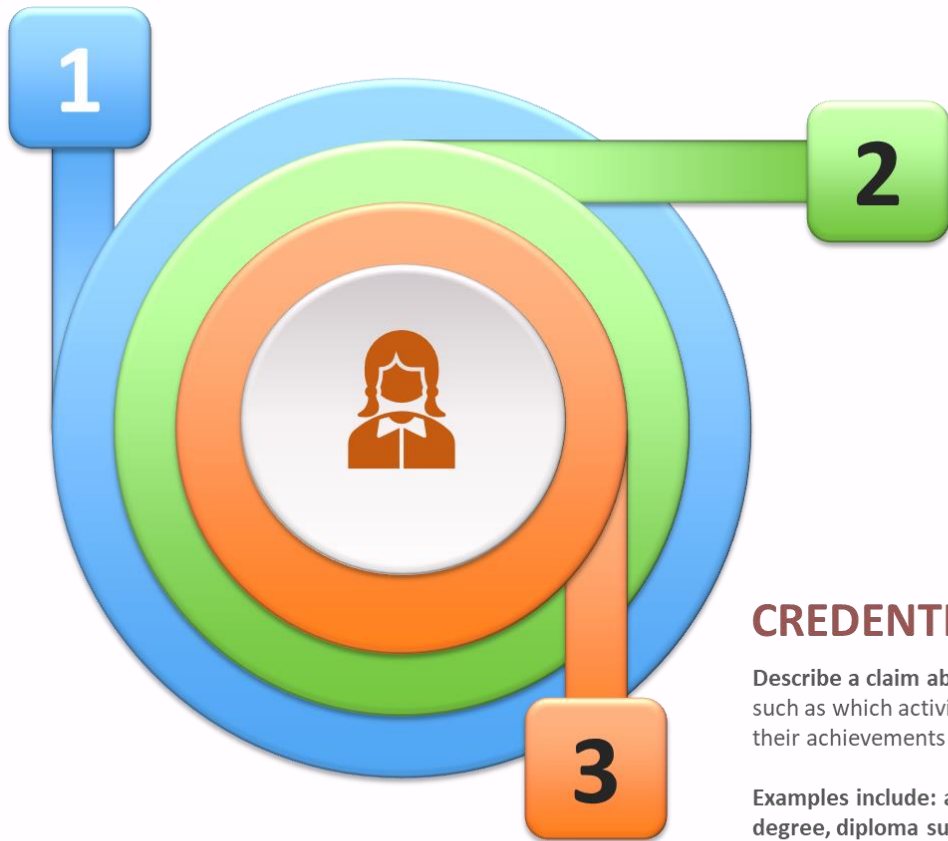
National, Regional or Sectoral extensions of the data model & application profiles to deal with specific use cases

## SPECIFICATIONS

specify what can be learned, what can be done and how it can be assessed.

Examples include:  
occupational profiles, competence frameworks, curricula, skill classifications

1



## OPPORTUNITIES

Describe an offer by an organization to direct an activity which leads to a learning outcome (proven by an assessment)

Examples include:  
courses, apprenticeships, voluntary experiences, etc.

2

## CREDENTIALS

Describe a claim about an individual such as which activities they have done, and their achievements proven by assessments.

Examples include: attendance certificate, degree, diploma supplement, letter of recommendation

3

# A Basic Ontology of a Lifecycle Concepts

## Implementation of these Concepts

### Specifications

- ESCO Skill Taxonomy
- Europass Database of Qualifications

### Opportunities

- Europass Database of Learning Opportunities

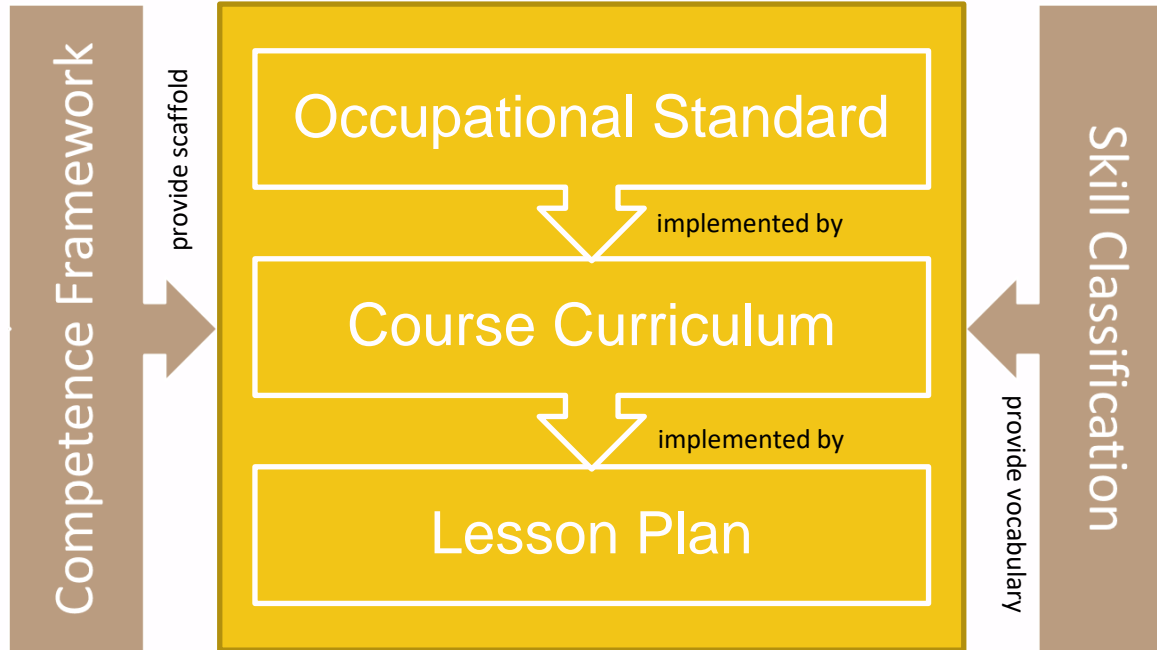
### Credentials

- European Digital Credentials



# Specifications

are interrelated and build on each other...



# The Model is actually a Suite of Services

- Directories of concepts in RDF
- Application Profiles for MS to code data
- Data Validation and Verification Services
- Directories of Learning Opportunities, Qualifications and Accreditations
- Authority Tables to standardise concepts



## A Focus on Credentials

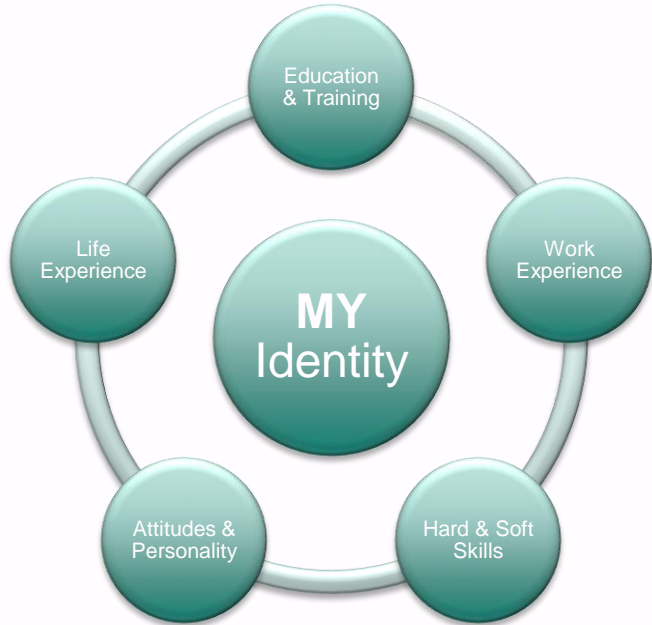


# A Framework to Understand Credentials



- As a person learns throughout their lifetime they create value
- Human Capital often refers to the sum of the value of the learning within an organization which can be monetised

# A Framework to Understand Credentials



How can I  
**communicate / optimise**  
what I know to overcome barriers to  
social mobility and/or employment?

*across sectoral and geographic barriers*



Create a **Framework**



No changes to existing (soft or hard) legislation



Design for Interoperability



Member States as primary stakeholders  
(Institutions, learners & employers as secondary stakeholders)



Valid across the EU



40 year lifetime



Diploma-Mill Proof



Works with existing systems in Public Service



Privacy-Protecting but not self-sovereign

# A Europass credential

## A Europass credential contains information about



**Metadata**  
(data about the credential)



**Issuer**



**Subject**  
(claims about person)



**eSeal**

## describes claims relates to



**Activities**



**Achievement**



**Entitlements**



**Attestation**



**Learning Outcomes**



**Assessment**

150 hours of  
coursework

DE Qualification as  
a Painter

Entitlement to  
work as a painter

Recognition of  
qualification in FI

100 hours of  
apprenticeship







LO of skill of  
painting


Final Examination  
Grade B

# Issue any Type of Credentials

- Degrees and Diploma Supplements
- Certificates of Attendance
- Memberships of Professional Associations
- Transcripts of Records
- School Leaving Certificates
- Mobility / Apprenticeship Records
- Validation of Non-Formal / Informal Learning

### Authenticity and Verification Check

-  **Format**  
This credential is technically valid.
-  **Seal**  
The credential is Sealed. This credential has not been tampered with since it was issued by by the University of Gozo on 20/02/2019
-  **Owner**  
This credential was issued to the wallet owner.
-  **Revocation**  
Verification step skipped.
-  **Accreditation**  
This credential has been accredited by the National Quality Assurance Agency (Italy).
-  **Validity**  
The credential is still valid.

 **Verified**



[View](#) > [View Credential](#)

## Diploma in Sociology

Date: 12/05/2019 | Type: Diploma

[Credential Summary](#) [Export](#) [Upload another credential](#)

[Share](#) [Print](#) English

Issuing organisation

Credential Owner

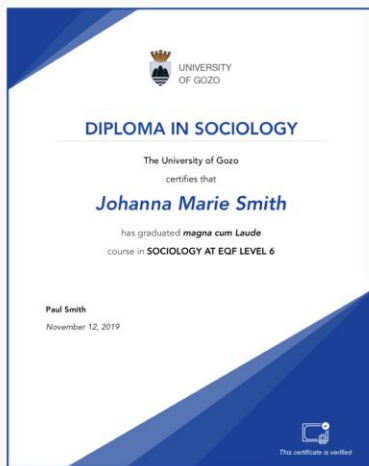
**Achievements**

Activities


Entitlements

Sub-credentials

Other Data



### Authenticity and Verification Check

- Format**  
This credential is technically valid.
  - Seal**  
The credential is Sealed. This credential has not been tampered with since it was issued by the University of Gozo on 20/02/2019.
  - Owner**  
This credential was issued to the wallet owner.
  - Revocation**  
Verification step skipped.
  - Accreditation**  
This credential has been accredited by the National Quality Assurance Agency (Italy).
  - Validity**  
The credential is still valid.
-  **Verified**





**Anthony Fisher Camilleri**

*Add your motto*

Consultant, Educational Policy and Quality Management Expert

[View full profile](#)


[Create a CV](#)

[Create a cover letter](#)

[My Library](#)

## Opportunities for you

 Settings

 See My Favourites



### Jobs

Update your profile or add new skills and interests to receive more suggestions of job opportunities

## Courses



### Medewerker evenementenorganisatie

SBB (Samenwerkingsorganisatie Beroepsonderwijs Bedrijfsleven),...  
01/08/2019 (24 month(s) ago)



### Master of Industrial Pharmacy

Institute of the Republic of Slovenia for Vocational Educatio...



### Volitatud energiatõhususe spetsialist, tase 8

SA Kutsekoda / Estonian Qualifications Authority, Estonia  
06/07/2021 (3 week(s) ago)



## My Skills

 Add new skills

quality assurance procedures |

develop strategy to solve problems |

provide leadership | project management |

## My Interests

 Add new interests

Find a job

Take a course

Develop new skills

## An end to end credentialling Infrastructure

### Standards

1. Europass learning model
2. Interoperability standards

### Services

1. Issuer
2. Wallet
3. Viewer
4. Accreditation DB
5. Course & Qualification Search
6. Open Data Services

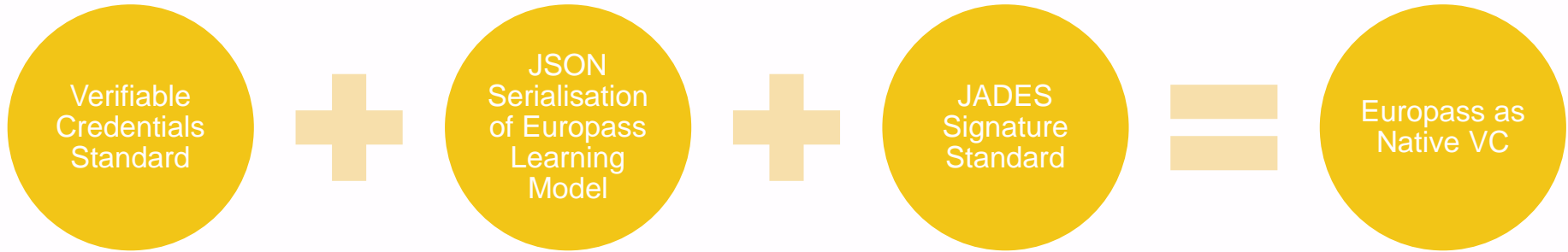
### Software & support

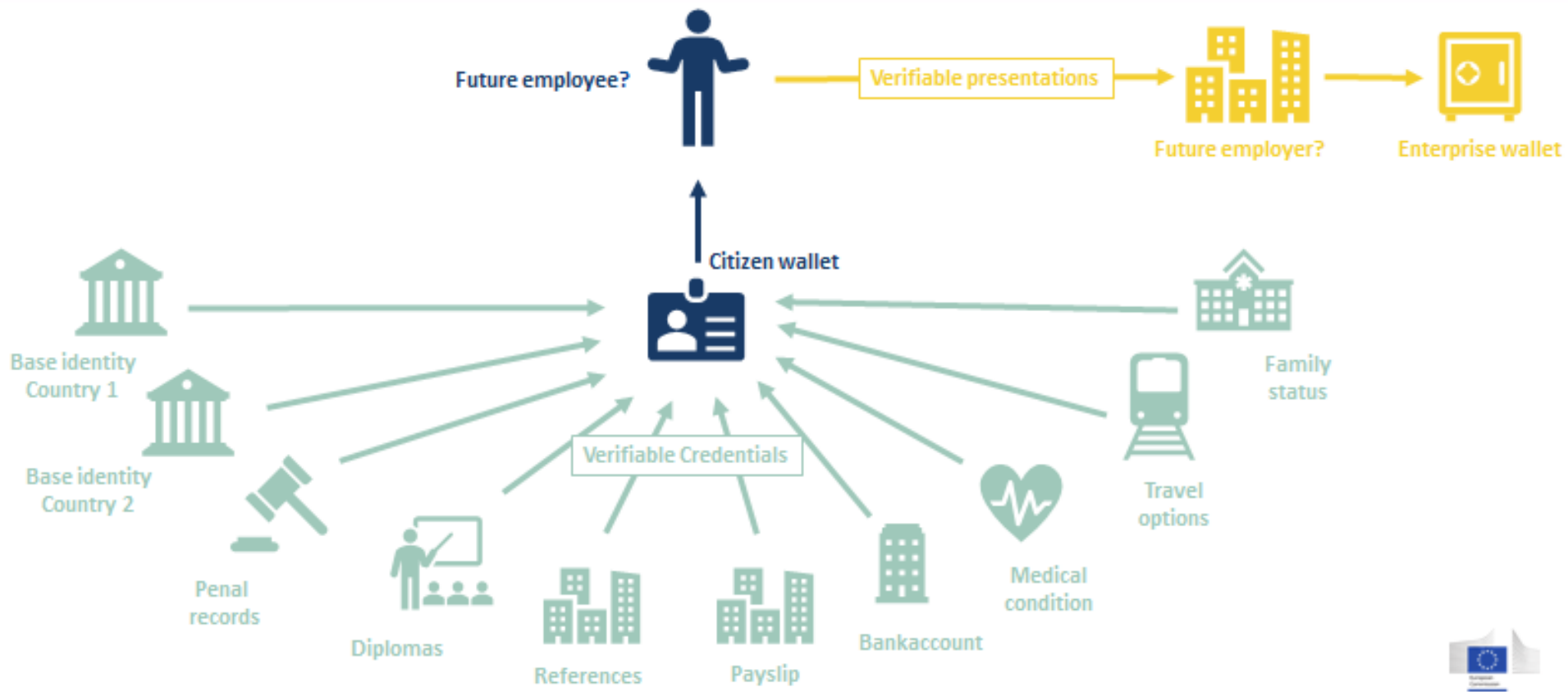
1. eldas & Europass code libraries
2. ,docker' images
3. Qualifications Dataset Register
4. Playground
5. API libraries
6. Helpdesk

# Future Developments



# Native Verifiable Credentials





en ECCOEEN EN Qualifications → en ESCO skills

Version: 41

Version: 1.1.0

Filter...

- Active Learning for Soft Skills Development
- Artificial Intelligence and legal issues
- Artificial Intelligence: An Overview
- Designing Learning innovation
- Discovering Nuclear- and Radio-Chemistry
- Ethics of Artificial Intelligence
- Fostering women's participation to STEM through MOOCs
- Integrity and beyond MOOC
- New paradigms in wastewater management: from a sanitation problem to a circular sustainable solu...
- Platform Thinking: designing a Platform
- Platform Thinking: exploiting data through platforms
- Platform Thinking: what's beyond Uber?
- Sustainable Urban Water Systems**
- Technologies and platforms for Artificial Intelligence
- Water: an essential resource

## Sustainable Urban Water Systems

In progress

Concept identifier

b687368a-bd9d-41f7-b961-5ecd927af336

Description

General description:

- The MOOC "Sustainable Urban Water Systems" aims to provide knowledge about modern and sustainable solutions for urban water systems in water sensitive cities. Focus is on stormwater management and water supply strategies for the mitigation of effects on the water cycles due to human settlements. Sustainable strategies integrate Nature-based Solutions (NbS) and Green Infrastructures (GI) to make cities resilient in front of global challenges, adding benefits to both the environment and community.

The first goal is to raise awareness of water cycle strategies to urban areas, but the primary intention is to work together with citizens, business...

### Learning Outcome Entities (5)

General description:

- The MOOC "Sustainable Urban Water Systems" aims to provide knowledge about modern and sustainable solutions for urban water systems in water sensitive cities.

**Focus is on stormwater management and water supply strategies for the mitigation of effects on the water cycles due to human settlements.**

Sustainable strategies

Integrate Nature-based Solutions (NbS) and Green Infrastructures (GI) to make cities resilient in front of global challenges, adding benefits to both the environment and community.

Browse

API search

AI suggestions

Occupation browsing

Filter...

Hidden results are not shown

- manage water flows and catchments
- water policies
- conserve water resource
- develop flood remediation strategies
- water consumption

Where do we  
want to go?





**Considers three perspectives:**

**1. Credentialing platforms**

Focusing on interoperability and incentives for open standards

**2. Employers**

Focusing on features and integration with existing products, and processes

**3. Colleges and universities/Issuers**

Focusing on issuing workflows and student experience



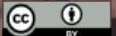
[Credentials to Employment: The Last Mile \(mit.edu\)](https://www.mit.edu/credentials-to-employment)

# Credentials to Employment: The Last Mile

Digital Credentials Consortium Report  
September 30, 2022

Anthony F. Camilleri, Brandon Muramatsu, Philipp Schmidt

**DCC** DIGITAL  
CREDENTIALS  
CONSORTIUM





## The Skills Based Hiring Paradox



Employers claim **skills-based hiring is the future** while **relying increasingly on degrees** as proxies for talent and **not issuing skill-credentials** for achievements of their own employees (which might be the key enabler)

The tools of interoperability  
need to be shared



across studies  
employ

# Recommendations



Add more Data on Skills and Competencies to Credentials (and Course Catalogues)



Choose Technical Solutions that Provide Interoperability



Pilot Employer Based Credential Issuing



Invest in Sectoral Competence Frameworks



Publish Trust Information as Linked Open Data



Create a Roadmap for an Integrated Skills EcoSystem

# Interoperability is About Student Choice

## How do I

**identify** which skills I need for my life goals?

**find** and **access** opportunities to acquire those skills

**communicate** knowledge about my skills

have my skills **recognised**

# Open Data as the Default



## Open Data Systems

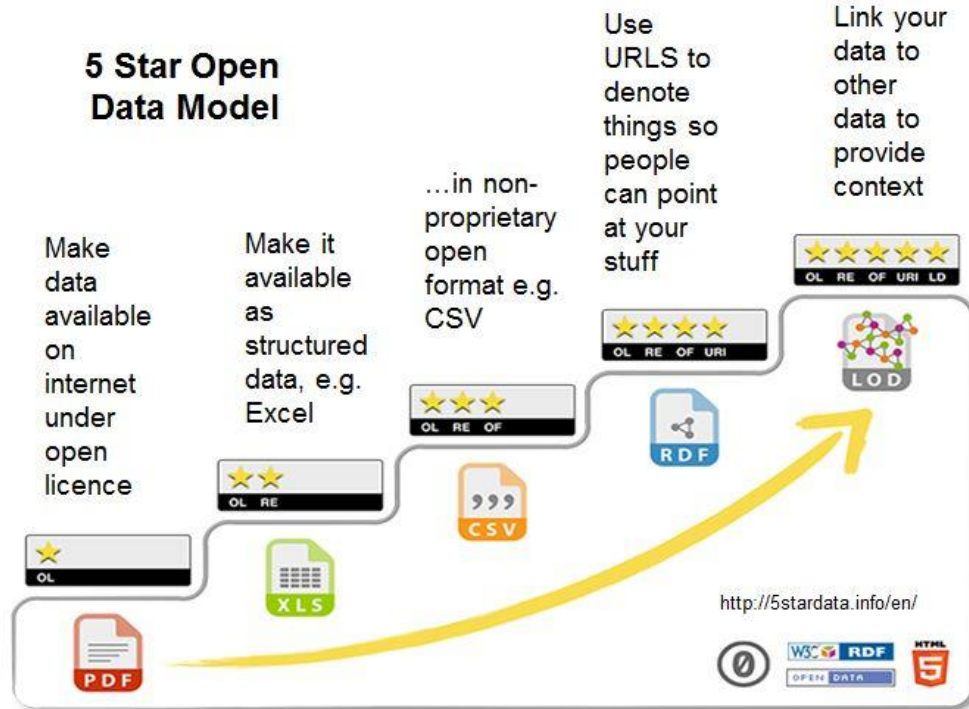
- decentralized governance
- data portability
- independent verification
- direct access to citizen wallets
- open standards

## Closed Data Systems

- centralised governance
- data silos
- Verification through intermediaries
- Mediated access to citizen wallets
- Proprietary closed standards

# Linked Open Data as the Default

## 5 Star Open Data Model



**Interoperability is a Core Educational Priority**

a **Skills-Based** Approach to Education



a **Data-Driven** Approach to Student Choice



# THANK YOU FOR YOUR ATTENTION

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Anthony F. Camilleri  
anthony@knowledgeinnovation.eu

You can download this presentation at:  
<https://www.microcredentials.eu>