



# QualiChain: Decentralised Qualifications on the Blockchain

Special Track along with eLmL 2020, November 21 - 25, 2020 - Valencia, Spain

**Dr Alexander Mikroyannidis, The Open University, UK**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 822404



# The Chair and Coordinator



**Dr Alexander Mikroyannidis** is a Research Fellow in the Knowledge Media Institute of The Open University. He has more than 10 years of research experience in the field of Technology-Enhanced Learning and specifically in personalised learning, self-regulated learning, lifelong learning, open educational resources and rich interactive learning materials, as well as applications of blockchain technology in education.

# The Special Track



This special track investigates the creation, piloting and evaluation of **decentralised solutions** for storing, sharing and verifying **education and employment qualifications**.

The special track is focused on the potential of **blockchain technology** for disrupting the domain of public education, as well as its interfaces with private education, the labour market, public sector administrative procedures and the wider socio-economic developments.

# The QualiChain Project



**Decentralised Qualifications' Verification and  
Management for Learner Empowerment, Education  
Reengineering and Public Sector Transformation**



# The QualiChain Pilots



# Submission #1



- **Title:** Exploring Blockchain for Public Sector Recruitment.
- **Authors:** K. Siassiakos, F. Bompoti, T. Papaioannou, K. Stagka, P. Zarafidis and A. Pavli.

The authors present a pilot case study of the QualiChain project, aiming to enhance the management of human capital resources in the Greek public sector.



Greek Supreme Council Of  
Personnel Selection



Candidate



Educational  
Institute

# Submission #2



- **Title:** Blockchain Applications in Education: A Case Study in Lifelong Learning.

- **Authors:** A. Mikroyannidis.

The paper presents a pilot case study of the QualiChain project, aiming at supporting lifelong learning through the combined use of Smart Badges and personalised recommendations.



Transparent & Immutable Accreditation



Personalised Recommendations



Personal & Professional Progression

# Submission #3



- **Title:** Using Blockchain, Semantics and Data Analytics to Optimise Qualification Certification, Recruitment and Competency Management: a Landscape Review.
- **Authors:** C. Kontzinos, O. Markaki, P. Kokkinakos, V. Karakolis, S. Skalidakis and J. Psarras.

The authors perform a state-of-play analysis on tools, applications and frameworks used in the domains of Qualification Certification or Recruitment/Competency Management.

TABLE I. ANALYSIS TABLE

| Tool/method name   |                    | Recognition Finder[5] |          |
|--|--------------------|-----------------------|----------|
| Category (tool, product, framework)  | Tool and framework | Current version       | Released |
| Description  |                    |                       |          |
| Recognition Finder is a tool for the recognition of foreign professional qualifications in Germany. Moreover, those seeking advice only need a few clicks and this online tool will name the competent authority for their application. In addition, it presents important information about the legal foundations, the recognition procedures for individual occupations and available counselling services in a concise form. Recognition Finder does not automatically verify the user's qualifications but finds the competent authority that the user needs to contact for the respective occupation. |                    |                       |          |
| Implemented technologies and functionalities   |                    |                       |          |
| <ul style="list-style-type: none"><li>• Recognition check allows users to see whether their professional qualifications are recognised in Germany</li><li>• The portal is available in German and English, as well as Arabic, French, Greek, Italian, Polish, Romanian, Russian, Spanish and Turkish.</li><li>• For mobile use, there is also the "Recognition in Germany" app, which offers the information in seven languages</li><li>• The database currently contains more than 1,500 different contact addresses for the recognition procedures of occupations</li></ul>                              |                    |                       |          |
| Added Value  |                    |                       |          |
| <ul style="list-style-type: none"><li>• In the "Recognition Finder", the user can enter his or her profession and use the occupational profile displayed to determine the German vocational certificate that matches the qualifications acquired abroad.</li><li>• Just a few clicks are sufficient to get the address where an application for an assessment of equivalence can be submitted.</li><li>• All the information that is important for submitting an application is summarised – for example the documents required for an application.</li></ul>  |                    |                       |          |

# Submission #4



- **Title:** Decentralised Qualifications' Verification and Management for Learner Empowerment, Education Reengineering and Public Sector Transformation: The QualiChain Project.

- **Authors:** C. Kontzinos, O. Markaki, P. Kokkinakos, V. Karakolis, S. Skalidakis and J. Psarras.

The paper presents the overall approach and potential impact of the QualiChain project, which is developing a decentralised platform for storing, sharing and verifying academic and employment qualifications.



## Career Counselling

- Individuals
  - Learners
  - Employment seekers



## Intelligent Profiling

- Individuals
  - Learners
  - Employment seekers



## Recruitment

- Public Organisations
- Private Companies (incl. HR consulting companies)
- Education / training providing institutions  
(and their personnel)



## Competencies' Evaluation and Development

- Public Organisations
- Private Companies (incl. HR consulting companies)  
(and their personnel)



## Consulting & Decision Support

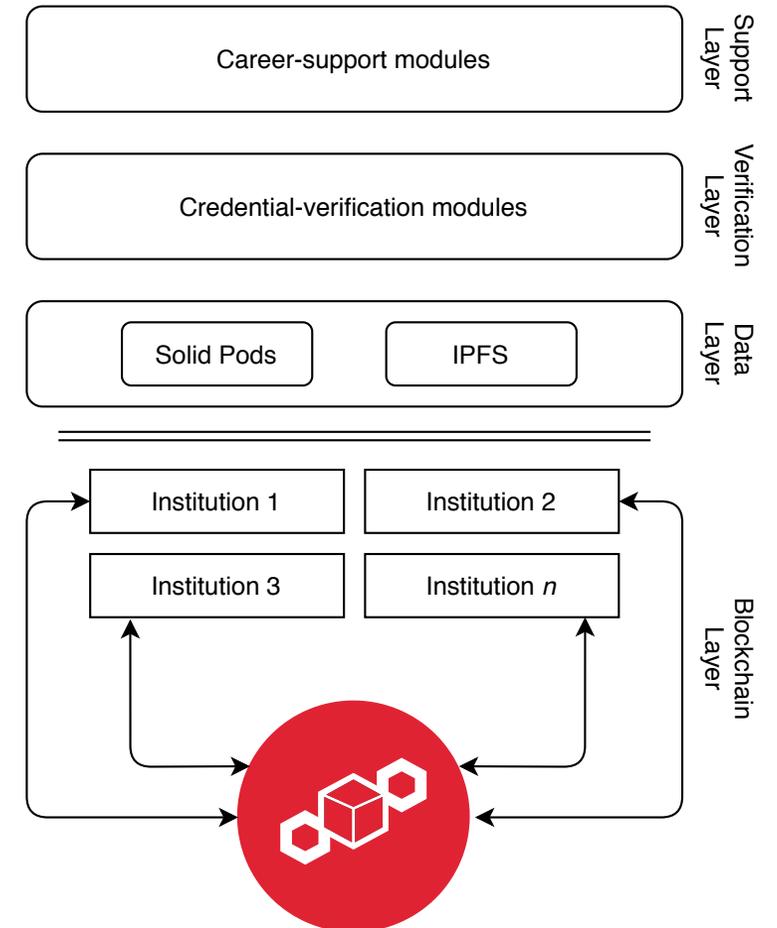
- Education/training providing institutions (public / private)
- Policy makers
- Public Organisations
- Private Companies (incl. HR consulting companies)  
(and their personnel)

# Submission #5



- **Title:** Towards A Blockchain-based Decentralised Educational Landscape.
- **Authors:** N. Chowdhury, M. Ramachandran, A. Third, A. Mikroyannidis, M. Bachler and J. Domingue.

The authors discuss how institutions could potentially manage record-keeping, credential verifications, and continued career support in a decentralised environment.



# Submission #6



- **Title:** Digital Transformation of Education Credential Processes and Life Cycles – A Structured Overview on Main Challenges and Research Questions.

- **Authors:** I. R. Keck, M.-E. Vidal and L. Heller.

The authors propose a methodology to capture qualitative descriptions and measurable quantitative results that allow to estimate the effectiveness of a digital credential management system in solving these challenges.

## II. CHALLENGES IN EDUCATION CREDENTIAL MANAGEMENT

How can the performance of a solution offering the issuing, management and verification of digital education credentials be evaluated? Based on the results acquired in [4], we propose to segment the questions of interest into three subtopics, that follow the process of changing from an analogue to a digital setting:

- A. Challenges of paper-based credentials;*
- B. Challenges of transition to digital credentials; and*
- C. Challenges of digital credentials.*

In the following sections, we present these experienced difficulties and propose ways how to measure the performance of a presented solution for the implementation and management of digital education credentials.

# Conclusions & Next Steps



- The QualiChain special track explores how Blockchain technology can realise the vision of **decentralised qualifications** and how it can help **transform the education landscape**.
- The special track submissions cover a wide range of **educational and employment use cases** and applications of Blockchain technology.
- In the context of the QualiChain project, the authors will be addressing the requirements and challenges set out in their papers, in order to **deploy and evaluate decentralisation solutions** for education and employment qualifications within various stakeholder communities.



Thank you for your attention!

Dr Alexander Mikroyannidis

[Alexander.Mikroyannidis@open.ac.uk](mailto:Alexander.Mikroyannidis@open.ac.uk)



/QualiChain



@QualiChain



/QualiChain

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 822404

