



chaise
blockchain skills for Europe

BLOCKCHAIN SKILLS STRATEGY ESSENTIALS

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About the CHAISE project

As a Sector Skills Alliance, CHAISE addresses the growing demand for blockchain and distributed ledger technologies (DLTs) skills across Europe.

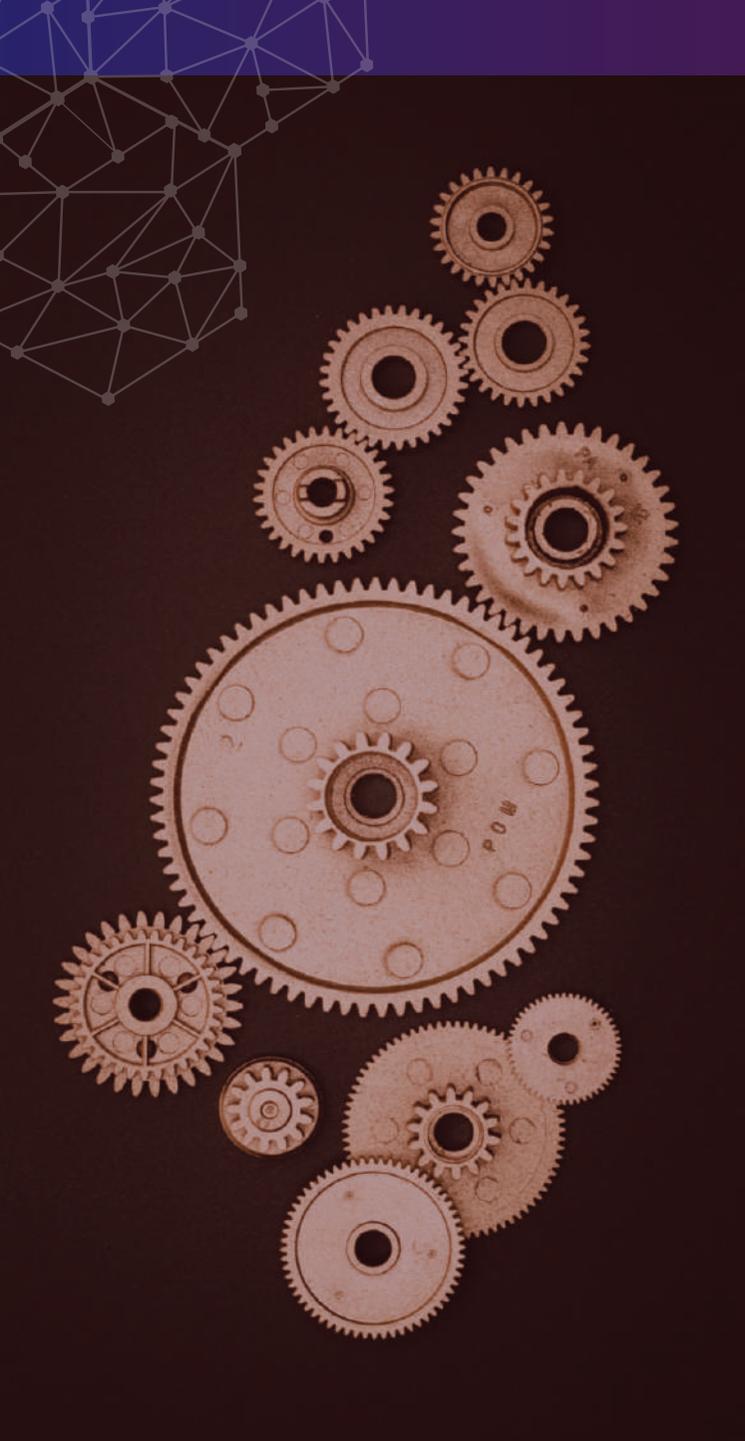
Mission

The core mission of the CHAISE project is to develop a strategic approach on blockchain skills development for Europe as well as to deliver future-proof training solutions, in order to tackle blockchain skill shortages and to respond to the current and future skill needs of the European Blockchain workforce.

Our website is available in 11 European languages! Learn more about the project and read our latest publications by visiting www.chaise-blockchainskills.eu. Follow us on social media: [Twitter](#), [Facebook](#), [LinkedIn](#) and [Youtube](#).

Project Partners





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INTRODUCTION

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Using this document

One of the main aims of the CHAISE project is to develop a European Blockchain Skills Strategy & Action Plan to respond to the current and future blockchain skills needs. The CHAISE consortium delivered the [European Blockchain Skills Strategy](#) in April 2022. This document provides an overview of the main elements of the strategy.

1. INTRODUCTION

Previous research of the CHAISE project showed that there is a higher demand for blockchain skilled employees than the current supply. This is mostly due to

1. a slow responsiveness of formal education to the current labour market needs,
2. a certain disconnection between the labour market and blockchain educational and training activities,
3. a low awareness of this emerging technology despite all the ongoing efforts and initiatives.

This gap might get even broader if no immediate action takes place. Against this background, the CHAISE European Blockchain Skills Strategy aims to provide a coordinated and practicable approach to tackle these issues.



CONTEXT



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2. CONTEXT

Before outlining the CHAISE Blockchain Skills Strategy, this document will explore several crucial elements to consider:

1. the state-of-play of the Blockchain labour market,
2. the CHAISE approach to a blockchain curriculum,
3. the current blockchain educational initiatives and
4. an analysis of the stakeholder groups.

2.1 Blockchain labour market

The current blockchain labour market can be briefly described as follows:

- The size and complexity of the blockchain labour market varies by country (CHAISE research showed that over 50% of all blockchain job adverts have been concentrated in four countries lately: Belgium, Germany, France, and Italy).
- Although recruitment is mostly concentrated around development and engineering roles, it is no longer limited to ICT or the financial sector.
- Blockchain is still predominantly a male industry in terms of both ICT and non-ICT positions (around 80% men vs. 20% women) and the labour market is mostly composed of young people in their twenties and thirties.

Having candidates who already have a good grasp of the basics of blockchain, cryptography, smart contracts, or the functioning of blockchain-based platforms like Ethereum, Hyperledger etc., would make the recruiting and



onboarding processes much easier and would be a significant advantage for the candidates themselves. Otherwise, companies must invest time and money in in-house training.

Thus, although the European blockchain sector is well placed on a global level, its future development is highly dependent on the availability of a skilled workforce. Hence, there is an urgent need to address the blockchain skills scarcity or it will prevent the sector from unleashing its full potential.

2.2 Blockchain curriculum

Regarding the scope of Blockchain Skills, as blockchain is no longer limited to the ICT sector and more industries are being disrupted by this technology, the CHAISE curriculum should go beyond the ICT skills and consist of the following layers:

- a fundamental understanding of technological principles and socio-economic implications,
- different levels of Blockchain ICT mastery (general, practitioner, expert) depending on the specific professional requirements,
- business and transversal skills.

Given the complexity of the blockchain ecosystem, there is a wide array of different blockchain occupations, which require different blockchain skill sets. Thus, to design a “one-size-fits-all” blockchain curriculum is not feasible, as it can be difficult to imagine a candidate cumulating strong business, transversal and IT skills as well as a great understanding of the industry specifics. Therefore, a Blockchain curriculum is not something static and it should be



approached from a **continuous (life-learning) perspective**, i.e. as a path rather than a one-time certificate of completion.

2.3 Blockchain educational initiatives

The mapping of the current state of blockchain educational initiatives in Europe carried out within the CHAISE project helps us understand the strengths and weaknesses of the current blockchain educational approach and identify the gaps which an efficient Skill Strategy should aim to fill.

There are only a few university degrees in Computer Science which include specialised blockchain courses. The current educational and training offerings in blockchain are mainly led by the private sector (76%). Countries with the strongest position in terms of blockchain training and education initiatives are Estonia, Italy, Slovenia, followed by Germany, Belgium, and Spain. These countries generally put great emphasis on blockchain initiatives, have developed blockchain national strategies, or are home to a growing number of blockchain start-ups.

Although the blockchain educational environment is still dominated by Computer Science & Informatics, interdisciplinary courses are gaining popularity. Most of the offerings are at the beginner level. Other factors such as mode of study, qualification obtained, etc. differ significantly.

There is an increased popularity of distance learning or a mixed approach. In terms of duration, while public providers offer courses with a duration of months or years (for Bachelor, Master, and PhD. degrees), in the private sector



there are courses requiring only a few hours.

Nevertheless, experts point out the **high level of mismatch between the skills in demand and those offered**. Indeed, many courses have been created because blockchain seems to be a trending topic over the last few years, but their quality might be questionable. Thus, an efficient Skill Strategy should tackle this problem by providing smart solutions to ensure the match between the demand and offer of blockchain skills, rather than focusing on the development of blockchain courses simply because it is a modern thing to do.

2.4 Stakeholders

A comprehensive Skill Strategy should be inclusive and account for all stakeholder groups that might need blockchain skills in the future. Therefore, we identified the following stakeholders:

- **Students**, who are entering the labour market and need a skills set that would guarantee their future career success,
- **Professionals**, whose functional roles or industry they operate in is disrupted by this technology, hence they need upskilling,
- **Lecturers**, who have to be up to date with the latest trends in their field, which nowadays often includes blockchain,
- **Policy makers and regulators**, who are going to govern different fields and need to make informed decisions, requiring a general understanding of the main implications and limitations of this technology,
- **General public**, which also needs a general understanding of this technology to combat the resistance to change that often accompanies new technological developments.

BLOCKCHAIN SKILL STRATEGY

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3. BLOCKCHAIN SKILL STRATEGY

Based on the comprehensive analysis of the aforementioned elements, the following section outlines the key principles and action plans of the CHAISE Blockchain Skills Strategy. Further, it introduces a decentralised (blockchain-based) job market/training platform, which will be developed step by step in the long term. Our Skill Strategy is based on the following principles:

- BROADNESS
- INCLUSIVENESS
- TIMELINESS
- COLLABORATION
- EFFICIENCY
- PROJECT ORIENTATION
- DECENTRALISATION
- INNOVATION
- ENTREPRENEURSHIP
- TRANSVERSALITY

With these principles in mind, five strategies together with the corresponding actions were formulated.

Strategy 1: Launching a consistent message of blockchain educational needs and mapping of the labour market situation

Strategic Objective	S1 - LAUNCHING CONSISTENT MESSAGES OF BLOCKCHAIN EDUCATION NEEDS	CHAISE PERIOD				POST CHAISE			
		2021	2022	2023	2024	2025	2026	2030+	
IMPLEMENTATIONS / ACTIONS	A1. Monitor labour market needs			■ ■	■ ■	■ ■	■ ■	■ ■	■ ■
	A2. Maintain a common Blockchain Job Database			■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	
	A3. Explore common interests in implementing joint educational initiatives			■ ■	■ ■	■ ■	■ ■	■ ■	
	A4. Regular monitoring of education and training by region		■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	
	A5. Develop blockchain skills guidelines for business and academia			■ ■	■ ■	■ ■	■ ■	■ ■	

Note: The black rectangles provide further information on the proposed timeline, action and/or actors

The first action introduced in this strategy is the **monitoring and evaluation of the blockchain labour market needs**, which is planned to be conducted by interdisciplinary and cross-border working groups and summarised every six months, starting in the second half of 2022 and exceeding the CHAISE project duration. The expected outcome will be an updated summary following the CHAISE [Study on blockchain labour market characteristics](#).

The next action is the **creation and maintenance of a common Blockchain job database**. The database is planned to be fully operating in the last quarter of 2022. The expected outcome will be a quarterly updated database. The entity in charge could be CHAISE or a similar consortium.



Another action would involve the adoption of a multi-stakeholder approach to initiate meetings of different stakeholder groups (business representatives, professional associations, academics, policymakers, etc.) to explore **common interests in implementing joint educational initiatives** related to blockchain. A yearly periodicity of such meetings would be recommended, starting in 2023. The expected final outcome will be a report containing a proposal of blockchain related educational initiatives.

In addition, a **continuous (yearly) monitoring and evaluation of education and training activities in the region** is proposed, starting at the end of 2022 and exceeding the CHAISE project period. CHAISE or a similar consortium, in collaboration with universities, should work closely with institutional stakeholders such as DG EDUCATION and DG CONNECT on this task. The expected outcome will be a repository of blockchain training programmes by region.

The continuous development and dissemination of a series of guidelines related to the latest updates in the blockchain labour market (trends related to skills, sectors, countries, new educational and training initiatives, etc.) by a panel of experts is planned to start at the beginning of 2023 with a yearly frequency.

Strategy 2: Creating a common European blockchain learning & knowledge-building platform

Strategic Objective	S2 - CREATING A COMMON EUROPEAN BLOCKCHAIN LEARNING & KNOWLEDGE-BUILDING PLATFORM	CHAISE PERIOD				POST CHAISE		
		2021	2022	2023	2024	2025	2026	2030+
IMPLEMENTATIONS / ACTIONS	A1. Creation of a Blockchain curriculum and theoretical learning content		Development	Pilot	Promotion, VET providers engagement, continuous evaluation			
	A2. Creation of an online degree programme (MOOC)		Development	Platform	Pilot	Promotion, platform updates, registration follow-up		
	A3. Creation of an ambassadorship programme		Blockchain Associations					
	A4. Creation of a freely accessible library with past capstone & ambassadorship project		Central platform of freely accessible use cases / projects					

Note: The black rectangles provide further information on the proposed timeline, action and/or actors

Strategy 2 includes the **creation of a blockchain curriculum and theoretical learning content**. Thus, during 2022, the CHAISE project will design a blockchain curriculum structure in compliance with the principles and strategies outlined in this report. The development phase will follow in March 2023 with the launch of a pilot Blockchain curriculum content (planned experiences/activities/courses content-syllabus to acquire a wide array of skills to achieve proficiency in Blockchain). Consequently, a phase dedicated to curriculum promotion and engagement with Vocational Education and Training (VET) providers will initiate. The duration is expected to exceed the CHAISE project period and the effectiveness of these actions will be evaluated periodically.

In parallel, the **creation of online degree programs (MOOC)** is planned. The development of an online platform (technical aspects) will start at the end of 2022, aiming to meet the deadline for an operative platform in mid-2023. After a successful



pilot stage, elaborated teaching materials will be translated into 11 (CHAISE partnership) EU languages. The promotion period should be initiated afterwards, complemented by necessary continuous updates. Follow-up registration is planned in parallel and would continue beyond the CHAISE period.

Another action of this strategy is the creation of an **ambassadorship programme**, where past students elaborate a use case within their company's internal working groups through a capstone project and collaborate with students pursuing a degree. These actions are planned to start in the second half of 2022 and would require an active participation of Blockchain Associations and willingness of companies to get involved in the ambassadorship programme. The ambassadorship programme would allow companies to engage in active training and education of the students.

The capstone projects would be available in a **freely accessible library** gathering all past capstone and ambassadorship projects. This library is planned to start in parallel to the ambassadorship programmes and will serve as a central platform of practical educational materials.

Strategy 3: Enhancing collaboration & knowledge transfer from business to academia

Strategic Objective	S3 - ENHANCING COLLABORATION & KNOWLEDGE TRANSFER FROM BUSINESS TO ACADEMIA	CHAISE PERIOD				POST CHAISE		
		2021	2022	2023	2024	2025	2026	2030+
IMPLEMENTATIONS / ACTIONS	A1. Support calls for projects/consortia		European institutions					
	A2. Promote active (close) collaboration between businesses and academic organisations (joint ventures)		European institutions					
	A3. Promote joint academic-professional conferences		Pilot		Univ. 3		Univ. 5	
				Univ. 2		Univ. 4		

Note: The black rectangles provide further information on the proposed timeline, action and/or actors

The foreseen actions of this strategy include **support from the European institutions via calls for blockchain projects/consortia** (interdisciplinary, cross-border, with a balanced number of academia-business partners). By proposing this action, we aim to boost the continuous effort of institutional stakeholders such as DG CONNECT to support new projects similar to CHAISE and to encourage the European Commission to keep its strong focus on digital innovation in Europe. Thus, this action will extend beyond the project’s timeline.

The next action aims to continuously **promote active (close) collaboration between businesses and universities**. With this action, we aim to boost the creation of “joint ventures” between academia and businesses, or a less formal format of collaboration such as inviting experts to give a lecture to university students within events like “Tech talks and coffee” or



similar. Thus, the main actors in charge would be academia and companies. Nevertheless, the European Commission can play a key role to encourage such collaborative efforts by providing some incentives.

At the same time, this strategy entails **the promotion of an ongoing employer-educator dialogue** to match identified needs with training provision in the EU region, through academic-professional conferences. The pilot conference is planned to be held at the beginning of 2023 and will be repeated on a yearly basis, every year in a different country. The conferences should be organised in collaboration with local universities and businesses, which would be a great opportunity for networking. The entities in charge might be DG CONNECT, CHAISE or a similar consortium, other associations such as INATBA, a hosting university, etc.



Strategy 4: Bringing blockchain to everyone

Strategic Objective	S4 - BRINGING BLOCKCHAIN TO EVERYONE	CHAISE PERIOD				POST CHAISE		
		2021	2022	2023	2024	2025	2026	2030+
IMPLEMENTATIONS / ACTIONS	A1. Convene a working group composed of experts to develop and disseminate a series of materials/reports/guidelines related to the use of blockchain in different industries and for the general public							
	A2. Create "blockchain embassies" - initiatives which would provide free consultations for a) individuals regarding cryptocurrencies, taxes, cybersecurity, scam warnings, education opportunities, etc. b) enterprises, by providing basic consultancy solutions							

Note: The black rectangles provide further information on the proposed timeline, action and/or actors

This strategy requires a strong focus on the public and planned actions include the **development and dissemination of a series of educational materials/guidelines** related to blockchain. This action is planned as a one-year effort (with a possibility to be extended if necessary) to create materials and prepare a campaign starting in the second half of 2023. The expected outcomes will be dissemination and marketing activities in form of communication materials, flyers, TV ads, YouTube videos, etc. The organisations in charge would be PR companies in collaboration with blockchain associations.

Another action underpinning this strategy is the **creation of "blockchain embassies"**, which would be based on initiatives providing free consultations for

- Individuals, regarding cryptocurrencies, taxes, cybersecurity, scam warnings, education opportunities, etc.
- enterprises, by providing basic consultancy solutions and networking).



This action is also planned as a continuous effort with outcomes in the form of events or info-sessions on topics such as cryptocurrencies, NFTs, or how and where to use blockchain in everyday life, what are the latest trends, etc. The organisations in charge might be local blockchain associations that spark closeness and trustworthiness and can be membership-based (corporate/individual), which will be for free or for a symbolic fee to ensure the access for everyone.



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Strategy 5: Creating a decentralised blockchain training & marketplace platform

Strategic Objective	S5 - CREATING A DECENTRALISED BLOCKCHAIN TRAINING & MARKETPLACE PLATFORM	CHAISE PERIOD				POST CHAISE		
		2021	2022	2023	2024	2025	2026	2030+
IMPLEMENTATIONS / ACTIONS	A1. Design Platform principles		Design					
	A2. Develop the platform (interfaces)			Development	Platform iteration 1	Platform iteration 2	Platform iteration 3	
	A3. Invite companies & academic institutions to connect to the platform				Key Actors from Blockchain Market & Academia			
	A4. Open registration for individuals to develop their curriculum & start accumulating micro-certificates (NFTs)				Micro-certificates, CV building			
	A5. Open the platform for recruitment to companies				Recruiting phase			

Note: The black rectangles provide further information on the proposed timeline, action and/or actors

The implementation of this strategy will start in October 2022 with the design of the platform principles and functionalities. In 2023, the platform development will start off with a duration of 12 months and technical functionalities will be periodically revised. In the first quarter of 2024, the key actors from the blockchain market and academia will be invited to test the platform. The testing period is estimated to take from 6 to 9 months. After a successful testing period and necessary adjustments, the registration will be open for individuals such as students and professionals who can start to build their CV through micro-certificates. This phase will start at the end of 2024 - the last year of the CHAISE project.

Consequently, the platform will be opened for all companies seeking blockchain candidates and is expected to be “autonomously” maintained based on blockchain technology with some periodical revisions to detect potential errors or biases. This action’s final outcome will be a decentralised platform, which represents a new way of learning, hiring and developing a personal curriculum. The key actors in charge will be academia, companies, and blockchain professionals.

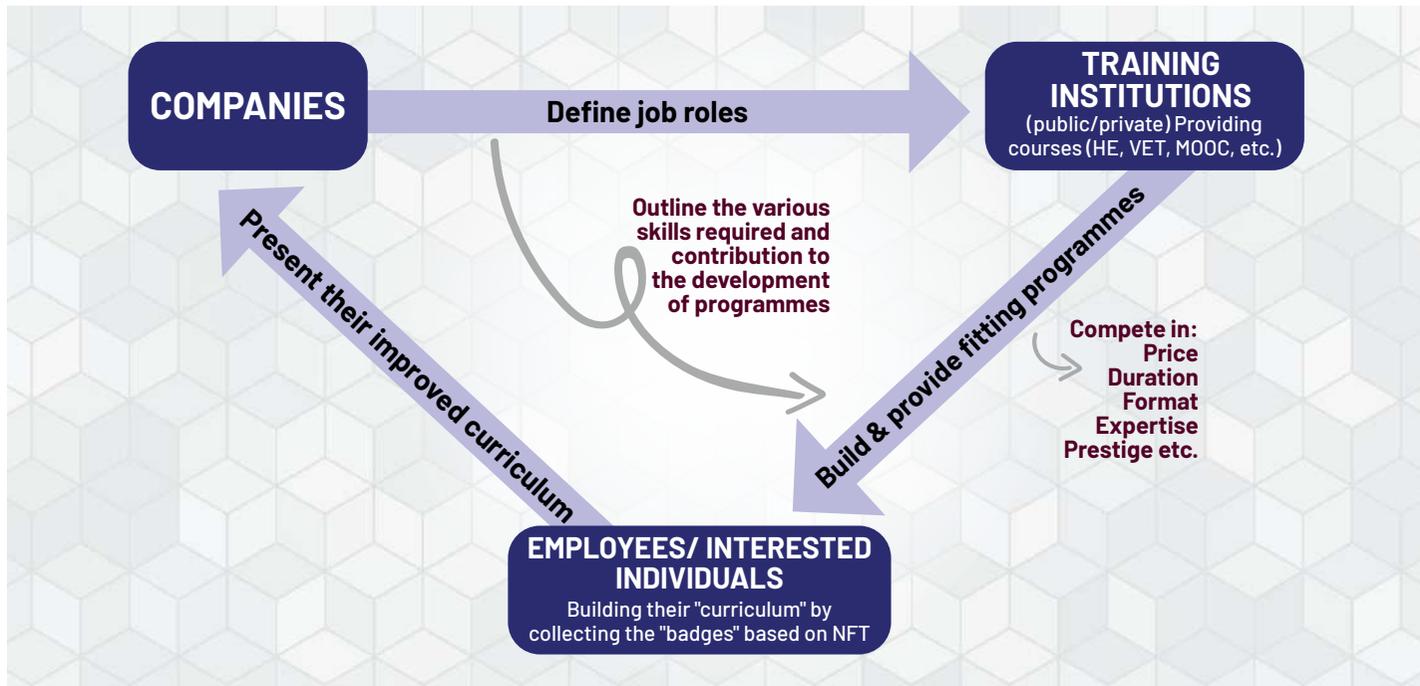


Figure 1. Decentralised blockchain-based training/job marketplace

This common place would merge the blockchain job market, where a company can post a job position and look for candidates with specific skill sets, and blockchain training institutions, which would act as providers of those skills. Employers will list a job position identifying the required skills. This job position will appear in the search dashboard for potential candidates who might apply if they own corresponding “badges” for the required skills or see the providers for the skills they still need to acquire.

Once an employee registers for the knowledge centre, they would be offered professional communities, new skills that appeared on the markets, as well as new opportunities for senior positions. The “badges” for each skill might be awarded to a candidate not only after taking a corresponding course, but also by a company after accomplishing a certain project/job. We believe that such an approach would be decentralised, bottom-up, dynamic, continuously updated, and tailored. In other words, it would represent an innovative approach to education and training, taking advantage of the latest technological developments.

CONCLUSIONS

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4. CONCLUSIONS

Blockchain will be one of the key drivers of change in the upcoming years and improved skills in this sector will be vital for the future of the EU. The collaboration between different stakeholder groups such as businesses, sectors of education, policy makers and regulators will play a key role.

As the formal education system has not been flexible enough and has not responded on time to current blockchain labour market needs, important reforms must be done to improve its relevance and meet the needs of the 21st century. Thus, we believe that using blockchain to teach blockchain via our decentralised training and job marketplace could be one of the smart solutions to tackle the current problem of mismatch between education and job market requirements.

Interested in learning more? Read the full CHAISE European Blockchain Skills Strategy [here!](#)

The logo for 'chaise' is rendered in a white, lowercase, sans-serif font. The letters 'a' and 'i' are stylized with a geometric, wireframe pattern overlaid on them, suggesting a digital or blockchain theme.

blockchain skills for Europe

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