



# EDU Crowdsale **WHITEPAPER**

<https://os.university/>



# Abstract

The Open Source University team is building first of it's kind platform based on Ethereum blockchain technology which will bring transparency between businesses, academia and learners. Our goal is to solve most of the currently existing problems for these three parties by connecting them on entirely new level.

Our aim is to address significant problems for businesses, learners and educational system as it is now by introducing our distributed application platform which solve problems like scalability, shortage of candidates with education and experience corresponding to business needs, rarely measure employee engagement, puur candidate experience, existence of recruitment organizations and job finding platforms playing as middlemen between candidates and businesses etc. Blockchain technology gives us the opportunity to store candidate's certification results which will make them trustworthy and easy for automatic distribution to all businesses and organizations.

Starting with more than 7000 massive open online courses, and a pool of 60 million learners across the world, our solution has the potential to reach up to 3 billion Internet users.

Our expertise in the fields of software development, blockchain & cryptography give us the confidence in creating distributed application platform that will be superior to all educational institutions, businesses, student and longlive learners around the world.



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# 1. Vision

Today over 3.16 billion Internet users from all ages, but most especially young people, are still awaiting for a global solution to revolutionize the way they learn, develop, progress, succeed in life.

Despite being in the information era, 4-5 years on-campus programs in a single-institution set up – public or private, are becoming growingly inconvenient solution for increasing number of people, especially in attractive, highly-desired areas, such as IT, in which young professionals are entering into the workforce, often relocating, before finishing their full studies, leaving them to choose between a successful career and a fulfilment of their formal degree.

Indeed, there are 50+ platform providers of free/open educational content that are established online brands – universities, networks of universities, etc., but the main idea behind platforms like “EdX”, “Coursera”, “Novo Ed”, “Udemy”, etc. is to provide an opportunity for the educational content creators – colleges, public/private/individual educational content providers, to meet with the end users, who can enroll into different courses.

One of United Nations' Sustainable Development Goals is to ensure inclusive and quality education for all and promote lifelong learning[1]. This goal completely corresponds with our vision to be able to use Open Source University platform also for donations in form of free education paid by businesses and organizations along with financial benefits for the educational system (academia) based on rate and successful candidates. Having in mind that “Universitas” stands for “the whole, the universe, the world” our intention is simple – to re-establish this classical community of teachers and scholars in a way, which it is fit for its purpose in the information age we live in.

The crypto-revolution that is happening now has the potential to achieve that goal – it will change things around by making education affordable, more beneficial by excluding third parties, traceability of all certificates, trustworthy by nature and simple as it is supposed to be. Decentralization, crypto-currency, and smart-contracts are the new solutions for people to be educated through, and qualified for the constantly changing business demands.

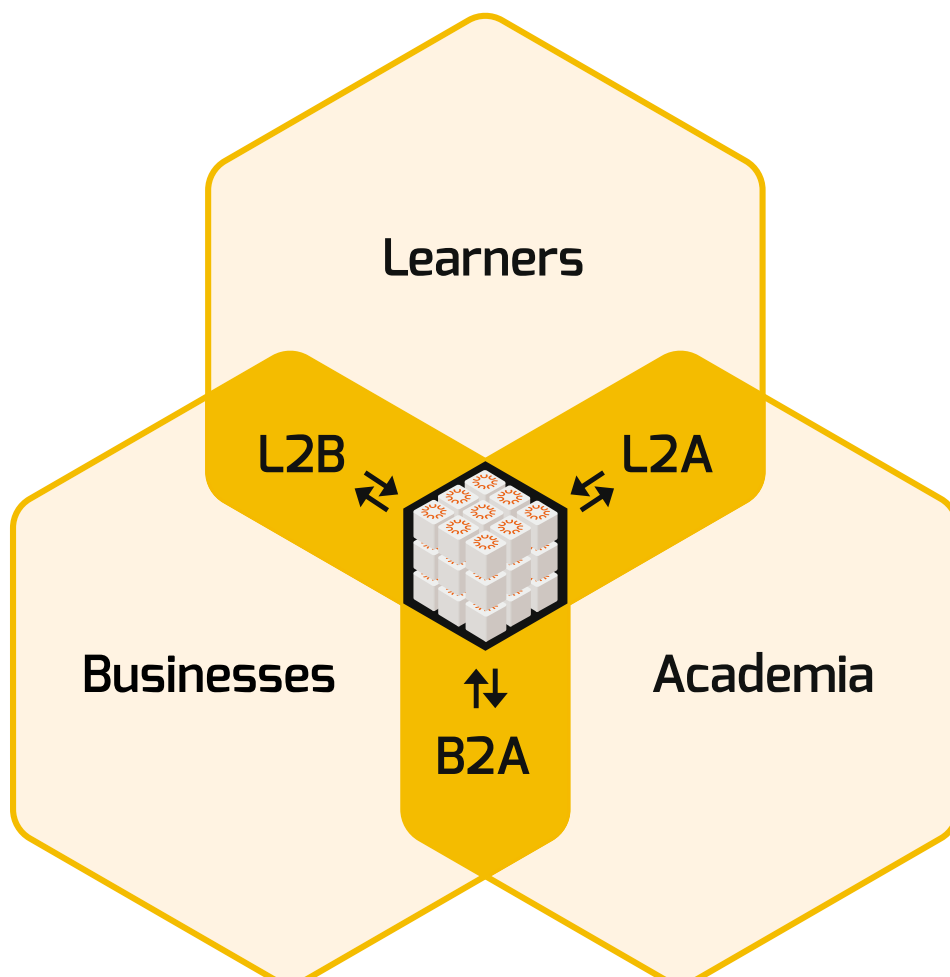
To give better overview about the counterparties it needs to be explained a bit more about used terminology from now on.





- **Business** - this term includes all the variate of small, medium and large size companies operating in all areas of science, technology, construction, healthcare, automotive etc.
- **Learners** - this term includes students, people gaining new speciality, lifelong learners, curious minds who are seeking new challenges and professional paths.
- **Academia** - this term includes all available till this moment MOOCs, High Schools, Universities, internal training programs and certification etc.

The connections between the counterparties may be shortened as follows: Business and Academy (B2A), Business and Learners (B2L), Learners and Academy (L2A).



## 2. Why blockchain

The true potential of the crypto currencies is still not fully revealed and expands far beyond the financial sector. Ethereum blockchain technology brings trust between untrusted parties and can easily facilitate potential agreements and all kinds of communication between businesses, academia and learners, saving time, money and avoid any misunderstandings. Nowadays this benefits are one of the most valuable assets organization can have.

This new technology allow us to introduce transparency and exclude delays and third party commissions between business, academia and learners. Blockchain enable us to regulate and give more options to all participants in this microenvironment by introducing clear and highly customizable framework to automatically connect all the participants (business, learners, academia). All information which is saved in the blockchain is immutable and transparent for everyone. This technology will give real time information for the most important KPIs of all participants. For example it can give real time information about the performance of every single employee in a business which is part of Open Source University network. Our highly customizable smart contract will take care also of verification and storing all learners certificates into the blockchain making them immutable and accessible to all businesses and organizations.

Feature is for innovators who dare to change the old rules and bring added value to all valuable parties.

### 2.1 Recruitment - business and learners (B2L) smart contract

Our highly advanced matching algorithm between business and learners will be implemented into a smart contract which will take care of the whole interaction. The connection between learners who has a set of skills in the blockchain and business with matching requirements for these skills will be done automatically by our B2L smart contract.



First and one of the most valuable benefits from this smart contract is that excludes third party recruitment companies. Retrenchment of the chain between hiring companies and learners lower dramatically business expenses in the process and higher percentage of successful candidates. From business perspective automatically excludes necessity to publish job openings and desperately trying to reach the right candidates. B2L smart contract will be used also for employee performance traction which can lead to transparent social benefits for top performers. Completely secure system build on top of the blockchain, allowing business to have most up to date knowledge base for their employees. The natural evolution for the business provoked by our B2L smart contract will be represented by better interaction with other business (as strategic partners).

**End result for the business (in B2L) will be:**

- Advanced matching algorithm (approaching the right learners)
- Dramatically lower recruitment expenses
- Increase success rate of new candidates
- Realtime performance indicators for current employees
- Transparent social benefits for top performers
- Up to date knowledge base inhouse
- Transparency in the interaction business-to-business (B2B)

Learners will use advanced matching algorithm to find best positions align with their experiences saving hours to search in different platforms. Real opportunity for the learners on a very early stage to be approached by business based on top performance. Our B2L smart contract will secure selected by business learners with option to allocate part of the hiring bonus as a compensation for the candidates in probation period.

**End result for the learners (in B2L) will be:**

- Advanced matching algorithm (selecting the right position with one click instead of switching between numerous job finding platforms)
- Direct connection of all learners with the business
- Transparent social benefits and compensations for employees
- Learners can be approached by business in a very early stage of their education (gives real live experience and possible career path before graduation)
- Direct connection between what you learn and professional opportunities you have



NOWADAYS	FUTURE WITH B2L SMART CONTRACT
<b>65% of employers claim</b> talent shortage is the biggest challenge in hiring	<b>&lt;20% of employers</b> will indicate talent shortage because of the connection to the infinite pool of fresh talents updating their skills every day in the blockchain.
<b>62% of employers</b> felt labor market was candidate-driven.	<b>Business and learners will form the market constantly changing demands.</b> Our B2L smart contract will let business and learners (feature employees and business owners) to generate new ideas and actively collaborate.
<b>64% of companies</b> only measure employee engagement once a year.	All business in the blockchain will <b>be able to measure all important for them KPIs in real time.</b>
<b>Almost 60%</b> of job seekers report having a poor candidate experience.	B2L smart contract will take care to contact business and learners by common areas of interest excluding any mistakes made during the old hiring process.
<b>74% of the workforce</b> are open to making a job move.	<b>&lt;15% of the workforce</b> will be open to make a job move because matching algorithm will pick the right candidates by measuring their interests.

## 2.2 Content-on-demand market - business and academia (B2A) smart contract

Our solution will give advantage to the business to pick right candidates directly from student desks and involve them into real world solutions. This ability to select candidates will be priceless for business which will have highly specialized employees. Business will have talented pool of learners on top of fingertips based on which they can pick the right candidates. B2A smart contract will facilitate also the opportunity for organizing internal specializations and trainings which will build up in-house knowledge.

### End result for the Business (in B2A):

- Solving scalability constraints
- Access to infinite pool of new talents
- Ability to approach learners by top performance results
- Customizing semi completed learners





On the other hand we have the Academia which will be paid by business for the opportunity to reach top talented successful candidates upfront. Motivation academia to provide high quality education will increase exponentially along with increasing financial benefits from business and rating scores (immutable and transparent for everyone).

**End result for the Academia (in B2A):**

- Scalability and education adequate to the real live demands
- Financial benefits given by the business when matching the right learner
- Partnership with business to organize internship programs
- Prestige (rating which will be updated in the blockchain)

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## **2.3 Educational - learners and academia (L2A) smart contract**

L2A smart contract will bring transparency and traceability in the entire micro environment between learners and academia. Helping the old educational system to go into the new technological age by complete transparency, security and flexibility which blockchain provides.

Academia will have absolute traceability over the results of all participants of their courses and degrees. Our smart contract will open endless possibilities to extend already designed functionality to a completely new level of real time collaboration between academia and learners. For example learners participating to a specific course or degree can securely save certificates and diplomas into the blockchain and having real time feedback about ongoing courses and how to improve their performance.

**End result for the Academia (in L2A):**

- Traceability of all participants for courses and degrees
- Real time performance information related to courses and degrees
- Transparency of all skill sets of the learners
- Automatically suggesting suitable candidates for newly formed courses and specializations
- Feedback from learners about feature improvements, features and ideas



Learners who are using L2A smart contract will have the ability to get instant information about newly forming programs and certification. Storing immutably their certificates into the blockchain. Learners can get feedback about current performance of their ongoing courses results and advices how to reach maximum result (performance). Another benefit of L2A smart contract is that groups of learners can be formed automatically by areas of interests and matching these groups to specific internship programs and applied real live specializations.

**End result for the learners (in L2A):**

- Authentic and immutable skill set saved in the blockchain
- Real time access to all new programs and experiments related to the area of interest
- Feedback how particular learner can improve his/her performance

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## 2.4 More details

Last, but not the least, there are actually a few projects, such as the ones, provided by Udacity, which organize their own courses into so called “nano-degrees”, and “Course Buffet”, which is an aggregator, enabling you to customize a pre-designed educational pathway, but none of the current solutions empowers the end-user of the knowledge to organize the knowledge himself, to enroll in a fully tailor-made programme, which is pan-university, trans-border, one that can be endorsed and recognized by different public and corporate entities around the world, thus to provide a fully-fledged alternative to on-campus, single-institution, closed-source curricula. We intend to deliver this opportunity to the world. As Linus Torvalds, the founder of Linux, once said -

**“In real open source, you have the right to control your own destiny.”**



## 3. Strategy

The whole education technology market spans into more than 40 discrete market segments, involving different parties. The Open Source University strategy is to involve all the parties into a distributed platform without any specific centralized dominant.

### 3.1. Involved parties

The main parties which will benefit from the project (yet the list is not limited) are:

#### 3.1.1. BUSINESSES

We live in rapidly changing times, especially for business. Let's just consider that in a single generation business have had to adapt to entirely new (digital) marketing channels, decide on how to invest in (and utilize) new technologies, and compete on a global stage — things that were barely imaginable a few decades back. Things have changed a lot since then and will continue to change with the rise of the 4th Industrial Revolution.

The source of business organizations are highly educated and motivated employees, which are turning ideas that seem to be impossible today, a reality tomorrow. Business will benefit from the Open Source University project by exploring and leveraging existing learning opportunities, organizing new learning pathways, shaping current demand of specialists and approaching the right candidates without any third party organization or job opening advertisements, saving time and money. One of the greatest benefits in the system we are developing is that part of the financial resources which every business will save in the process can be invested back to employees and academia, which will boost educational system and motivation of the learning and working force.

#### 3.1.2. STUDENTS AND LIFELONG LEARNERS

We want to establish the first blockchain solution for the educational sector, which creates opportunities for all. This unique decentralized software solution will take care of handling the information for all courses, certifications, and grades students have (coming from different learning providers – institutional, but also non-formal education).



Students will benefit from the system, because all their achievements will instantly be saved in the blockchain and distributed to organizations that provide academic and professional development opportunities. **All achievements of the learners will be stored and distributed over the blockchain to all working in the same area business organizations with respect of the privacy of every single learner.**

The strong social innovation aspect of the Open Source University is that it will help in finding the right development opportunities not only for the technically savvy, the ones with access to high quality education in general, but for millions of learners from socially excluded or underprivileged groups, and others that are not traditionally enrolled in higher education, incl. displaced migrants, people with disabilities, an even growing number of elderly, incarcerated, facing social stigma, low-income households...

Open educational content coming from learning providers from all over the world, in a variety of different languages and platforms. Now is the moment to UNIFY all this knowledge spread over the network, store it into the blockchain securely and to connect promising student to the right professional opportunities doesn't matter religion, location or social status. This process will happen automatically and will release learners to figure out how better to present themselves to the businesses. **Our smart contracts will handle entire process of promoting the right learners to businesses over the Ethereum blockchain.**

### 3.1.3. ACADEMIA

We will be the GNU/Linux of Higher Education – providing the opportunity to open source all areas of the Academia governance setup, related to the interaction with students and public and private sector demands.

Nowadays e-learning content providers (with products ranging from MOOCs to master degrees) are making significant progress building high quality courses and alternative learning experiences, such as micro-masters and nano-degrees, covering the practical applications of the skills every participant is going to gain. Harvard, MIT, Berkeley, among others, are some of the schools that you have at your fingertips through the EdX platform. 400,000+ certificates were proudly earned by edX students up until 2015. Coursera, another of the best practices, partners with the US State Department to create “learning hubs” around the world – a project through which students can get internet access, take more



than 500 courses from 100+ top universities and educational organizations, and participate in weekly in-person study groups to make learning even more collaborative.

Furthermore, the numbers below that highlight the success of some of the leading learning content providers, speak for the great need to support and advance the expansion of the sector for the good of society in general:

- **Udacity** started, based on a successful pilot online course in Stanford that attracted 160 000 students from more than 190 countries.
- **Coursera** has 24 million registered users signed up for its programs, and offered more than 2 000 online courses.
- **Open edX** is an open source platform that powers edX courses, which has more than 10 000 000 users. Through the platform, the percentage of students required to retake a particular course dropped from 41% under the traditional format to 9% for those taking the edX blended course offering.
- **Udemy** has over 7 million students & more than 30 000 courses as of 2016. Furthermore, there are more than 16 000 instructors and 80+ course-on-demand languages, excluding the “Udemy for Business” corporate training/learning portal.

**We invite members of the Academia into a distributed network of contributors, which contains impeccable and up to date information about the achievements and skills every learner gained along his/her road to excellence.** Benefit for the Academia is that we'll transform the old inefficient system of paper registers, manually tracked information, lost data, into ONE shared place where all the information, related to each learner will be safely stored and available on demand. Our system in sense of relation between academia and learners will be like a personal wallet, but containing all the information, associated to every degree, specialization, or course that this participant has gained over the years.



## 3.2. Development Phases

Learning process has never been easier and more transparent. Now blockchain will prove the track record for every learner in real time. Our solution will disrupt the standard academia and make qualitative connection between business, learners and academia.

Closing the learning cycle from academia to business. Allowing all these knowledge and benefits to flow freely through the blockchain. Using peer-to-peer technology and encrypting the sensitive information we'll be able to connect directly specific businesses, academia and learners with matching skills, interests and requirements. Businesses will be able to sponsor right candidates via smart contract without third parties and numerous platforms for job finding. At the same time will be handled also all status updates related to the specific candidate (gaining new courses or specific degree). These updates will be sent via smart contracts to academia and businesses which will reflect to immediate updates in all ledgers.

Academia will earn financial bonuses from all learners which have been chosen by the business and have passed interviews for specific position. Academia will have a larger audience of learners who will be more involved because they'll know that results gained by them will go directly to the business which is constantly searching for a new talent via Ethereum blockchain. Our decentralized application (DApp) along with multiple smart contracts will take care of all the information and connections in the backend regarding every single learner in the system. Developing this technology we are saving time of all learners to focus on the important for them things and connects automatically all the right academic and business organizations which are offering opportunities corresponding to their needs and desires.

Open Source University intends along with the integration of this decentralized application to allow initiating generosity programs for educational purposes. Final solution will have also the opportunity to facilitate internal courses for the business and donations to specific groups of people who can't afford education and the right to prove themselves in a specific area of knowledge. All criteria of the donations can be set in the smart contract and donors can be certain that the sponsorship has reached its destination avoiding any third parties and saving a lot of capital for the actual donations. Nowadays reaching the right target is one of the most valuable assets and by using designed for that purpose smart contracts we are able to create trustworthy relations between business, academia, learners and all kinds of humanitarian activities they might have.





## 3.3. Gas Consumption

Since the Open Source University project is Ethereum blockchain based system, part of the operational issues that we investigated were related to the gas consumption. In order to stimulate all parties to be involved into the learning process, and stimulate them to provide content that is adequate to the market demands, decision was taken to distribute the gas consumption expenses as follows:

### 3.3.1. BUSINESSES

The gas used to create and modify degree blocks into the Ethereum blockchain will be paid by the business (and/or any other organizations that are leveraging the system from content perspective). Business will also cover the gas, consumed by Academia (when those were syncing the courses into the blockchain) + their interest rate (if one is defined).

If a learner wants to approach specific business organization, but there is not a full match (i.e. all courses and requirements, defined by the business degree blocks), gas used for the communication will have to be covered by the student. Whenever there is a full match (students that completely cover business-defined learning pathways) and there is communication between student and business parties, gas expenses will be covered by the business.

### 3.3.2. LEARNERS

Gas expenses, related to profile updates, courses progress, and payments for courses will initially be covered by the students. In the future, based on the Generosity concept in OS.University, after a mutual agreement, business will be able to cover students' expenses partially or entirely.

### 3.3.3. ACADEMIA

The gas used for synchronizing courses data into the Ethereum blockchain will initially be paid by the Academia (provides of MOOCs and other learning experiences). Whenever Business start to combine those courses into learning pathways, i.e. "open source degrees", those expenses will be refunded to the Academia. In addition, business will pay interest rate according to what is defined by the learning providers, whose offerings are being leveraged.





## 4. Benefits

Business will benefit from shaping candidates/employees expertise and from directly approaching their learning and development needs in a distributed manner. All "men in the middle" will be excluded from the picture, thus reducing business expenses, reducing lead-time, and increasing expertise accuracy.

Academia will benefit from scaling their audience (hence the economy of scale), gaining competitive advantage through modernization and automation of operations, combined with customization of the educational experience.

Learners will benefit from receiving higher quality education (adequate to the needs of economy) and from directly approaching employers when it comes to matching the expectations with the individual learning and development profiles - all done directly through the Ethereum blockchain (without a middle-man).

Certifications will automatically be written into the blockchain, cutting the bureaucracy and allowing all stakeholders to focus on the important aspects of life and business.

Any personal information of the parties involved will be stored in an encrypted & secure way.



# 5. Technology

## 5.1. Overview

Open Source University shall be a distributed education and certification platform, operating on the public Ethereum blockchain. The platform distinguishes 3 main networks where business, learners and Academia will transparently collaborate.

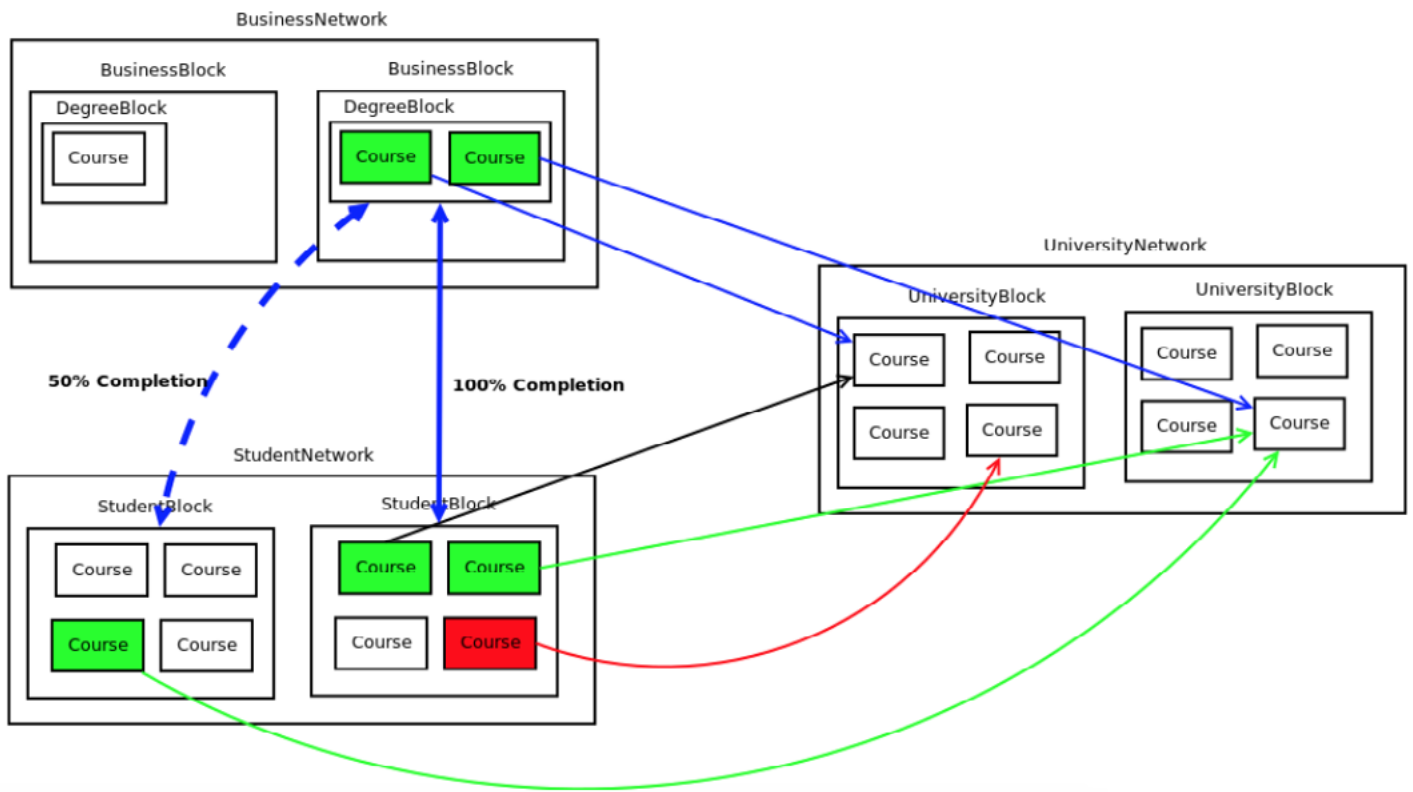
Our aim is to bring the education process to its next level. We will enable Massive Open Online Courses (MOOCs) and other high-quality learning opportunities, which are distributed over a number of online platforms and providers, to be openly integrated into the Open Source University platform, using smart contracts. This will allow students to benefit locally from the global opportunities in a structured, and systemized way.

Business will be able to define distributed learning pathways/ open source degrees, truly representing their demands and publish them on the Ethereum blockchain, allowing to complete those degrees and receive certification that is distributedly preserved and guaranteed. In case of a degree match, students and business will be able to directly communicate.

We call the critical set of smart contracts facilitating the most important interactions between business, students and Academia "OSUni Core". It will be kept small and highly modular to mitigate the possibility and impact of potential bugs in smart contracts.

"OSUni Core" will be made publically available with an open-source license and will go through multiple security audits on every update, to ensure the users that we'll pursue the highest quality possible.





## 5.2. Architecture of the OSUni Core

- **EDU Token:** the ERC20 token used to trade courses and degrees
- **OSUni Business Registry:** handles information about company profiles & their degrees
- **OSUni Academia Registry:** handles information about Academia & their courses/degrees
- **OSUni Learner Registry:** handles information about students, progress & certification
- **OSUni Interview:** handles communication between businesses & learners
- **OSUni Generosity:** handles education related donations for courses and degrees



## 5.3. OSUni Core Versioning Scheme

The OSUni Core is going to use semantic versioning model. Given a version number **MAJOR.MINOR.PATCH**, increment the:

- **MAJOR** version when you make incompatible API changes;
- **MINOR** version when you add functionality in a backwards-compatible manner;
- **PATCH** version when you make backwards-compatible minor improvements.

Additional labels for pre-release and build metadata are available as extensions to the **MAJOR.MINOR.PATCH** format.

## 5.4. DAPP & Hyperlog

Detailed data will be kept in the blockchain in a multi-master, append-only database called 'hyperlog' based on 'MerkleDAG' objects, composed by many DAGNodes that are linked using Ethereum blockchain technology.

To ensure consistency, the overall result will be verified through the OSU Interview module. Involved parties will be able to log information which will be used during every business <> learner "interview" process. Exchanging private data sets peer-to-peer will redefine the Ethereum blockchain network and bring much needed privacy for the sensitive information, along with full transparency of the transactions.

Nevertheless, this approach improves scalability, because 'hyperlog' functionality is essentially an equivalent to sharding. (see "Scalability" section for more details on how the data will flow between the parties involved).

### 5.4.1. BUSINESS PROFILES

When it comes to recruitment, business will be able to target the right candidates for a specific position by organizing all the learners that are available in the blockchain under unique addresses. 'OSU Business Registry' will take care of recording company profiles into the blockchain, aggregating students by skills and using 'hyperlog' (peer-to-peer connection) + 'node-rsa' (for generating 512



bit-length keys for the sensitive information) in addition to MapReduce (condensing large volumes of data into useful aggregated results) in order to handle big data smoothly on the client side.

One of the most valuable benefits is that 'OSU Business Registry' saves significant amount of time and money for the business in the process of connecting the right candidates, excluding the third parties.

#### **5.4.2. LEARNERS PROFILE**

It will be possible for the students to pay for specific courses or programs/ specializations/ open source degrees (i.e. block of courses) with all conventional currencies including ETH, BTC and LTC. Within the structure, information for every learning opportunity will be specified.

#### **5.4.3. ACADEMIA PROFILE**

Academia will start to rip the benefits of joining the blockchain the moment the business start to add preferable learning experiences, aggregating blockchain data, according to their needs and requirements. When business combine specific courses into custom specializations, adapted to their profile, fees that are already set will be payed to the institutions and experts, supplying the content. The fee (when such is charged) will be decided upon by the educators and will be publicly distributed over the Ethereum blockchain. Academia will have rating recorded into the blockchain which can be updated from businesses and learners based on provided content and top talents formed by specific academia.





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## 5.5. Security

Securing our Token and sensitive information distributed over the blockchain is **our highest priority**. We are making three step security audits. First step is detailed internal test for information security vulnerabilities like reentrancy bugs, ponzi schemes, manipulation of smart contract outcome etc. Second step is to test every new version and upgrades of the contracts over test network consulting with private already launched successful ICOs.

We know that developers of smart contracts **must be much security focused** than their traditional software counterparts. Over the blockchain the design and programming paradigms evolved exponentially. Unlike traditional software lifecycle, where version upgrades is the norm, smart contracts are immutable once deployed. Smart contract architecture must be highly modular foreseeing future changes, if any, can be isolated to small areas.

Our testers of smart contract security understand the new paradigm of distributed trust computing and showing proficiency in frameworks as **Open Zeppelin** and **Oyente**. We strongly believe that raising awareness and responsibility on smart contract security are both essential steps in beginning to build a solid defense against future attacks.

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## 5.6. Scalability

A further perk of keeping data into the blockchain only shared between businesses/learners, is that only they get access to the messages handled by OSU Interview module. However, the general public can still see on the blockchain recorded tags and data of all the learning experiences (course, programs, etc.), related to a specific address, but nothing more.

"OSUni" network has several layers: the first one is OSUni exchange, which is build on Ethereum smart contracts, containing few solutions allowing us to have flexibility adding few layers on top of one scalable base.



In short, we are adding unique functionality to an already working Ethereum blockchain. By nature our extension using hyperlog and MapReduce processing and aggregating big data sets to retrieve the right information to our clients is extremely scalable and maintainable by all nodes in the ecosystem.

## 6. Token

Within the Open Source University ecosystem, our token (EDU) will be used to facilitate the connections in the educational system between Business, Learners and Academia (MOOCs and other learning opportunities).

Academia will be able to create courses and programs and upload part of the information, related to those, into the blockchain. Once the student enrolls into a specific course or a learning pathway (provided for free, or with a fee) all the information about the expertise and progress will be saved in the blockchain. That will allow business to target the right candidates, keeping in mind that private information about the contact of students will be kept highly secured behind public addresses of transactions, which can't be traced.

Business will also be able to publish courses and open source degree blocks, and refund the educational process for promising candidates/employees partially or entirely. The number of participants for courses will increase exponentially corresponding to the added value of the courses and degrees, which Academia is supplying.

Originally, the ERC20 token standard was available and actively being discussed as an Ethereum Improvement Proposal (EIP). On GitHub, Hudson Jameson of the Ethereum Foundation said, "To be clear, this is NOT a new version of ERC-20. This PR is simply meant to formally define ERC-20 version 1 since there are slight deviations within the community. Once community consensus on version1 is reached, we will mark this ERC as accepted and it will become official with regards to the EIP repo."

Open Source University token (EDU) is designed according the latest EIPs that has been adopted in the previous hard fork and these planned for immediate adoption expected to be included on the next hard fork.

EDU tokens will be created during the presale and actual sale period in regards of how many are purchased and acquired during that periods.



## 7. Team



### **Hristian Daskalov**, *Project Lead*

Author of the book "Stakeholder Management in Higher Education, Research & Innovation". Former secretary general of the national students' assembly in Bulgaria. PhD student at Sofia, Brno, and Riga Technical Universities in the area of open source project management. Policy expert at the Brain Workshop Institute with background in the area of innovation, incl. as part of the expert body behind the national investment program on science and education, and as a consultant to the Ministry of Economy on the "Smart Specialization Strategy" (S3).



### **Jordan Jambazov**, *Technology Lead*

Senior Software developer with 10+ years of experience. Co-founder of software consulting company IO Era. Open Source software advocate. Jordan has experience in organizing and leading academic courses and broader learning & development initiatives, such as hackathons, in an open and collaborative manner, leveraging community engagement and co-creation tools and techniques.



### **Dobromir Kovachev**, *Blockchain Developer*

More than 10 years experience in software development field combined with successfully finished software solutions with National significance for customers like "Kozloduy" NPP, "Belene" NPP and NABUCCO pipeline. Deep understanding of blockchain and real live solutions. Passionate visionary and lifelong learner, with years of experience as developer and coach of cross functional teams.





### **Momchil Jambazov**, *Creative Technologist*

Digital designer, web developer and problem solver with over 8 years of experience in building websites, e-commerce and other digital experiences. Momchil is passionate about new technologies, such as blockchain cryptocurrencies, and strives to build a better and more beautiful web. His other passion is related to open education, incl. Massive Open Online Courses (MOOCs) as a mean to open-up academic learning towards new audiences. His entrepreneurial experience includes co-founding three successful companies in the field of web and application development - Emptybit, Code Ideo and IO Era, working with clients from Europe to Canada and the United States.



### **Vladimir Tasev**, *Blockchain Developer*

Vladimir has deep knowledge as a software engineer with rich experience in .NET framework, SQL Server, web development and Solidity. His professional experience begins as Software developer at DeltaStock LTD - the leading company for providing integrated online trading services to clients from all segments in Bulgaria. He is currently involved in several projects in the digital world. He is a co-founder of Cerve.me and founder of the Softador.com. All of this is supported by a degree of Business Informatics that provided him with the knowledge in developing IT strategies and project management that involves establishing and pursuing the project goals.



### **Petar Angelov**, *Developer*

Petar has a solid experience in the IT field with more than 6 years working as a Programmer Analyst. Additionally, he has a profound knowledge in .Net framework and SQL Server technologies. What adds up to his professional experience is the development of trading forex software. Along with his role as a developer, he is also engaged in business analysing. Since the beginning of 2016 Petar has been a huge blockchain fan and etherium enthusiast. His knowledge and experience is also backed up by a Masters degree in Information Technologies.



## 8. Roadmap

### 2015

OSUni proof-of-concept phase initiated, along with corporate partners from Bulgarian industry and software development sectors, resulting in early versions of system's architecture and design. OSUni research project initiated at the Faculty of Management within the Technical University of Sofia, resulting in scientific publications on the subject, published in Bulgaria, Latvia, and the Czech Republic.

### 2016

OSUni announced among top 10 social innovation ideas globally, in competition with 400 technology concepts and 130+ project proposals as part of the Living Progress Challenge of Hewlett Packard Enterprise. OSUni receives positive reviews and engages in expanding its partnership network under programs for support of young entrepreneurs, led by the Ministry of Economy and the Open Society Institute, as well as through the Sofia Business School.

### 2017

OSUni announced as 2017 "YouthSpeak" forum winner in Latvia, based on a scaled-down prototype version, resulting in a 2-month distributed learning program implementation project at a community center in Sao Paulo, Brazil. OSUni development phase reaches important milestone, given the expansion of the team with professionals from a leading software consultancy and experts, specializing in blockchain-based applications, leading the way to our initial currency offering (ICO).

### 2018

EDU tokens will be registered for trading at various cryptocurrencies exchanges. Universities, online platforms, and other L&D providers, will be onboarded, along with their educational offerings. Beta version of OSUni platform is to be released in Q4 2018.

### 2019

A global educational marketplace will function on top of the distributed database, i.e. the Ethereum blockchain. Academia, learners, and businesses will have the chance to see the benefits of implementing the platform in practice – from learning, credentials verification, and career development perspective.



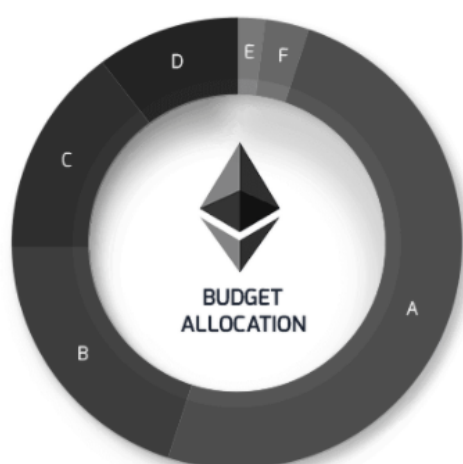
## 9. Crowdsale

The tokensale will be held through a smart contract. Its address will be published on the Open Source University website on 20th of November. The first funding round (the presale) will end either when 4,800,000 EDU tokens are sold or on 31st of December. EDU tokens are sold to accelerate the development of the Open Source University platform. The presale goal is to raise ~3750 ETH for funding the platform's Alpha release and initial business development. The Alpha release, the main tokensale and EDU token exchange listing should take place in first half of 2018.

### DURING PRESALE:

The first **2,601,600** tokens sell at a price of: 1350 EDU per 1 ETH

The other **2,198,400** tokens sell at a price of: 1200 EDU per 1 ETH



A	DEVELOPMENT	50%
B	BUSINESS DEVELOPMENT	20%
C	MARKETING	15%
D	REGULATION & TAXES	10%
E	CONTINGENCY	2%
F	LEGAL & ADMINISTRATIVE	3%



A	PRE-SALE	4,800,000 EDUs
B	PUBLIC TOKEN SALE	30,000,000 EDUs
C	OPEN SOURCE UNIVERSITY	8,400,000 EDUs
D	TEAM & ADVISERS	3,840,000 EDUs
E	BOUNTY PROGRAM	960,000 EDUs





## 10. Building traction

As part of our sustainability and traction building strategy, we are going to approach and build partnerships with businesses, academic institutions and student organizations.

Some of the potential partners that we recognize on the ed.tech vertical are Coursera, EdX, Udemy, Future Learn, Open 2 Study and others listed in document “Research on the existing EdTech business landscape”.<sup>[3]</sup>

As business partners we will directly approach all “Fortune 2018” technological companies and a dedicated team will be working with them to flawlessly adopt the technology.

In order to build traction among students, we will directly approach international, national, and local technology-oriented and representative student bodies, starting with: ESU (European Students Union), ESTIEM (European Students of Industrial Engineering & Management), BEST (Board of European Students of Technology), NASC (National Association of the Students Councils).

## 11. Disclaimer

We have invested in seeking out legal and compliance expertise to ensure that EDU crowdsale meets all current regulatory rules of the Initial Coin Offering at the ICO-stage.

According to the professional opinion of our legal advisors, based on the Howey Test our EDU Tokens should not be deemed as securities and do not need to be registered as a security.

OS.University focuses on the legislative regulation of ICO, digital tokens and operations with cryptocurrencies to provide our Users and Contributors safe and reliable solutions for crowdfunding

**EDU Token is a utility token and it does not constitute any kind of securities.**



In accordance with the laws and with respect to our contributors we adopted "know your customer" procedure (KYC). This procedure will be in place for all our contributors.

Our KYC procedure is based on already provided solution by Parity Technologies Ltd called PICOPS ( <https://picops.parity.io/#/> ). PICOPS solution was integrated into our website (<https://os.university/>) according described instructions by Parity Technologies Ltd. <https://github.com/paritytech/certifier-website/wiki/PICOPS-Developer-Guide>.

If the contributors pass all the legal procedures implemented into PICOPS by Parity Technologies Ltd. before contributing they have to fill in Surname, Given name, Country, email and already verified ETH Wallet on our platform (<https://os.university/>). Except this all contributors have read and agreed with the Whitepaper, Terms and Conditions and Privacy Policy documents. Also all contributors needs to declare that they are not US citizens.

Our process of whitelisting and includes all the details mentioned above.

Our EDU token pre-sale period will start from 20.11.2017 till 31.11.2017 but if we change the dates later on because of unpredicted circumstances, we accept no responsibility.

Our EDU token sale period will start from 04.06.2018 till 01.07.2018, when we have released OSUni platform's alpha. If unpredicted circumstances occur we accept no responsibility.

**RECHAINED Ltd. company is behind statements like Open Source University, OSUni and We. RECHAINED Ltd. is the legal owner of all the information, code, designs, tokenomics and materials issued which are related to Open Source University project.**

## 12. EDU token circulation

When OSUni platform is mature enough and all participants can collaborate and benefit by using it, it's necessary to take reasonable fees to be able to continue working on the customer experiences and all extra requirements and suggestions you might have. All fees will be taken only from users which have made transactions using ethereum for method of payment.



Token fee will be divided by participants:

- OSUni platform will take transaction fee for subscriptions of new businesses and academia's into the platform, aggregating paid courses to the blockchain, bidding for preparing custom courses and interview bounties dropped by businesses to learners.
- Learners will receive EDU tokens when they win challenges prepared by academia and businesses, business proactive candidate searching and if particular learner set the right to make contact with him to be paid.
- Academia will receive fee from requests for custom courses by businesses and organizations along with benefits from all paid courses.
- Businesses are gaining access to endless pool of learners, selecting already existing or preparing new learning programs corresponding with current business demands.

Platform fees will be divided on two parts which are:

- 30% of EDU tokens burnout.
- 70% will be allocated for market expansion and OSUni platform support

## 13. Legal

### 13.1. Disclaimer of liability

To the maximum extent permitted by the applicable laws, regulations and rules, RECHAINED Ltd. shall not be liable for any consequential, indirect, special, incidental, or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits, and loss of use or data), arising out of or in connection with any acceptance of or reliance on this Whitepaper or any part thereof by you.

### 13.2. Risks and uncertainties

Prospective purchasers of EDU tokens (as referred to in this Whitepaper) should carefully consider and evaluate all risks and uncertainties associated with RECHAINED Ltd., the Distributor and their respective businesses and operations, the EDU tokens, the RECHAINED Ltd. Initial Token Sale (each as referred to in the Whitepaper), all information set out in this Whitepaper and the T&Cs prior to any purchase of EDU tokens. If any of such risks and uncertainties develops into actual events, the business, financial condition, results of operations and prospects of RECHAINED Ltd. could be materially and adversely affected. In such cases, you may lose all or part of the value of the EDU tokens.



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### **13.3. No representations and warranties**

RECHAINED Ltd. does not make or purport to make, and hereby disclaims, any representation, warranty or undertaking in any form whatsoever to any entity or person, including any representation, warranty or undertaking in relation to the truth, accuracy and completeness of any of the information set out in this Whitepaper.

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### **13.4. Terms used**

To facilitate a better understanding of the EDU tokens being offered for purchase by the Distributor, and the businesses and operations of RECHAINED Ltd., certain technical terms and abbreviations, as well as, in certain instances, their descriptions, have been used in this Whitepaper. These descriptions and assigned meanings should not be treated as being definitive of their meanings and may not correspond to standard industry meanings or usage. Words importing the singular shall, where applicable, include the plural and vice versa and words importing the masculine gender shall, where applicable, include the feminine and neuter genders and vice versa. References to persons shall include corporations.

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### **13.5. No further information or update**

No person has been or is authorised to give any information or representation not contained in this Whitepaper in connection with RECHAINED Ltd. and its respective businesses and operations, the EDU tokens, the RECHAINED Ltd. Initial Token t (each as referred to in the Whitepaper) and, if given, such information or representation must not be relied upon as having been authorised by or on behalf of RECHAINED Ltd. The RECHAINED Ltd. Initial Token Sale (as referred to in the Whitepaper) shall not, under any circumstances, constitute a continuing representation or create any suggestion or implication that there has been no change, or development reasonably likely to involve a material change in the affairs, conditions and prospects of RECHAINED Ltd. or in any statement of fact or information contained in this Whitepaper since the date hereof.

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### **13.6. No offer of securities or registration**

This Whitepaper does not constitute a prospectus or offer document of any sort and is not intended to constitute an offer of securities or a solicitation for investment in securities in any jurisdiction. No person is bound to enter into any contract or binding legal commitment and no cryptocurrency or other form of payment is to be accepted on the basis of this Whitepaper. Any agreement in relation to any sale and purchase of EDU tokens (as referred to in this Whitepaper) is to be governed by only the T&Cs of



such agreement and no other document. In the event of any inconsistencies between the T&Cs and this Whitepaper, the former shall prevail. You are not eligible to purchase any EDU tokens in the RECHAINED Ltd. Initial Token Sale (as referred to in this Whitepaper) if you are a citizen, resident (tax or otherwise) or green card holder of the United States of America, a citizen or resident of the Republic of Singapore, citizen or resident of Republic of China or citizen or resident of South Korea. No regulatory authority has examined or approved of any of the information set out in this Whitepaper. No such action has been or will be taken under the laws, regulatory requirements or rules of any jurisdiction. The publication, distribution or dissemination of this Whitepaper does not imply that the applicable laws, regulatory requirements or rules have been complied with.

### **13.7. No advice**

No information in this Whitepaper should be considered to be business, legal, financial or tax advice regarding RECHAINED Ltd., the Distributor, the EDU tokens, the RECHAINED Ltd. Initial Token Sale (each as referred to in the Whitepaper). You should consult your own legal, financial, tax or other professional adviser regarding RECHAINED Ltd. and its respective business and operations, the EDU tokens, the RECHAINED Ltd. Initial Token Sale (each as referred to in the Whitepaper). You should be aware that you may be required to bear the financial risk of any purchase of EDU tokens for an indefinite period of time.

### **13.8. Representations and warranties by you**

By accessing and/or accepting possession of any information in this Whitepaper or such part thereof (as the case may be), you represent and warrant to RECHAINED Ltd. as follows:

- you agree and acknowledge that the EDU tokens do not constitute securities in any form in any jurisdiction;
- you agree and acknowledge that no regulatory authority has examined or approved of the information set out in this Whitepaper, no action has been or will be taken under the laws, regulatory requirements or rules of any jurisdiction and the publication, distribution or dissemination of this Whitepaper to you does not imply that the applicable laws, regulatory requirements or rules have been complied with;



- you agree and acknowledge that this Whitepaper, the undertaking and/or the completion of the Blockchain Initial Token Sale, or future trading of the EDU tokens on any cryptocurrency exchange, shall not be construed, interpreted or deemed by you as an indication of the merits of the Blockchain, the EDU tokens, the Blockchain Token Sale (each as referred to in this Whitepaper);
- the distribution or dissemination of this Whitepaper, any part thereof or any copy thereof, or acceptance of the same by you, is not prohibited or restricted by the applicable laws, regulations or rules in your jurisdiction, and where any restrictions in relation to possession are applicable, you have observed and complied with all such restrictions at your own expense and without liability to Blockchain ;
- you agree and acknowledge that this Whitepaper does not constitute a prospectus or offer document of any sort and is not intended to constitute an offer of securities in any jurisdiction or a solicitation for investment in securities and you are not bound to enter into any contract or binding legal commitment and no cryptocurrency or other form of payment is to be accepted on the basis of this Whitepaper;
- you agree and acknowledge that in the case where you wish to purchase any EDU tokens, the EDU tokens are not to be construed, interpreted, classified or treated as:
  - 1) any kind of currency other than cryptocurrency;
  - 2) debentures, stocks or shares issued by any person or entity (Blockchain)
  - 3) units in a business trust;
  - 4) derivatives of units in a business trust;
  - 5) units in a collective investment scheme;
  - 6) rights, options or derivatives in respect of such debentures, stocks or shares;
  - 7) rights under a contract for differences or under any other contract the purpose or pretended purpose of which is to secure a profit or avoid a loss;
  - 8) any other security or class of securities.
- 9) you are fully aware of and understand that you are not eligible to purchase any EDU tokens if you are a citizen, resident (tax or otherwise) or green card holder of the United States of America, a citizen or resident of the Republic of Singapore, a citizen or resident of South Korea or a citizen or resident of China;
- 10) you have a basic degree of understanding of the operation, functionality, usage, storage, transmission mechanisms and other material characteristics of cryptocurrencies, Blockchain-based software systems, cryptocurrency wallets or other related token storage mechanisms, Blockchain technology and smart contract technology;
- 11) you are fully aware and understand that in the case where you wish to purchase any EDU tokens, there are risks associated with Blockchain and its respective business and operations, the EDU tokens, the Blockchain Token Sale (each as referred to in the Whitepaper);
- 12) you agree and acknowledge that Blockchain is not liable for any indirect, special, incidental, consequential or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits, and loss of use or data), arising out of or in connection with any acceptance of or reliance on this Whitepaper or any part thereof by you;
- 13) all of the above representations and warranties are true, complete, accurate and non-misleading from the time of your access to and/or acceptance of possession this Whitepaper or such part thereof.





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## 13.9. Restrictions on distribution and circulation

The distribution or dissemination of this Whitepaper or any part thereof may be prohibited or restricted by the laws, regulatory requirements and rules of any jurisdiction. In the case where any restriction applies, you are to inform yourself about, and to observe, any restrictions which are applicable to your possession of this Whitepaper or such part thereof (as the case may be) at your own expense and without liability to RECHAINED Ltd. Persons to whom a copy of this Whitepaper has been distributed or disseminated, provided access to or who otherwise have the Whitepaper in their possession shall not circulate it to any other persons, reproduce or otherwise distribute this Whitepaper or any information contained herein for any purpose whatsoever nor permit or cause the same to occur.

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## 13.10. Cautionary note on forward-looking statements

All statements contained in this Whitepaper, statements made in press releases or in any place accessible by the public and oral statements that may be made by RECHAINED Ltd. or its respective directors, executive officers or employees acting on behalf of RECHAINED Ltd. (as the case may be), that are not statements of historical fact, constitute "forward-looking statements". Some of these statements can be identified by forward-looking terms such as "aim", "target", "anticipate", "believe", "could", "estimate", "expect", "if", "intend", "may", "plan", "possible", "probable", "project", "should", "would", "will" or other similar terms. Neither RECHAINED Ltd., the Distributor nor any other person represents, warrants and/or undertakes that the actual future results, performance or achievements of RECHAINED Ltd. will be as discussed in those forward-looking statements. The actual results, performance or achievements of RECHAINED Ltd. may differ materially from those anticipated in these forward-looking statements. Nothing contained in this Whitepaper is or may be relied upon as a promise, representation or undertaking as to the future performance or policies of RECHAINED Ltd. Further, RECHAINED Ltd. disclaim any responsibility to update any of those forward-looking statements or publicly announce any revisions to those forward-looking statements to reflect future developments, events or circumstances, even if new information becomes available or other events occur in the future. However, these terms are not the exclusive means of identifying forward-looking statements. All statements regarding RECHAINED Ltd.'s financial position, business strategies, plans and prospects and the future prospects of the industry which RECHAINED Ltd. is in are forward-looking statements. These forward-looking statements, including but not limited to statements as to RECHAINED Ltd.'s revenue and profitability, prospects, future plans, other expected industry trends and other matters discussed in this Whitepaper regarding RECHAINED Ltd. are matters that are not historic facts,



but only predictions. These forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause the actual future results, performance or achievements of RECHAINED Ltd. to be materially different from any future results, performance or achievements expected, expressed or implied by such forward-looking statements.

These factors include, amongst others:

- (a) changes in political, social, economic and stock or cryptocurrency market conditions, and the regulatory environment in the countries in which RECHAINED Ltd. conducts its respective businesses and operations;
- (b) the risk that RECHAINED Ltd. may be unable to execute or implement their respective business strategies and future plans;
- (c) changes in interest rates and exchange rates of fiat currencies and cryptocurrencies;
- (d) changes in the anticipated growth strategies and expected internal growth of RECHAINED Ltd.;
- (e) changes in the availability and fees payable to RECHAINED Ltd. in connection with their respective businesses and operations;
- (f) changes in the availability and salaries of employees who are required by RECHAINED Ltd. to operate their respective businesses and operations;
- (g) changes in preferences of customers of RECHAINED Ltd. ;
- (h) changes in competitive conditions under which RECHAINED Ltd. operate, and the ability of RECHAINED Ltd. to compete under such conditions;
- (i) changes in the future capital needs of RECHAINED Ltd. and the availability of financing and capital to fund such needs; (j) war or acts of international or domestic terrorism;
- (k) occurrences of catastrophic events, natural disasters and acts of God that affect the businesses and/or operations of RECHAINED Ltd.;
- (l) other factors beyond the control of RECHAINED Ltd. ; and
- (m) any risk and uncertainties associated with RECHAINED Ltd. and their businesses and operations, the EDU tokens, the RECHAINED Ltd. Initial Token (each as referred to in the Whitepaper). All forward-looking statements made by or attributable to RECHAINED Ltd. or persons acting on behalf of RECHAINED Ltd. are expressly qualified in their entirety by such factors. Given that risks and uncertainties that may cause the actual future results, performance or achievements of RECHAINED Ltd. to be materially different from that expected, expressed or implied by the forward-looking statements in this Whitepaper, undue reliance must not be placed on these statements. These forward-looking statements are applicable only as of the date of this Whitepaper.



## 13.11. Market and industry information and no consent of other persons

This Whitepaper includes market and industry information and forecasts that have been obtained from internal surveys, reports and studies, where appropriate, as well as market research, publicly available information and industry publications. Such surveys, reports, studies, market research, publicly available information and publications generally state that the information that they contain has been obtained from sources believed to be reliable, but there can be no assurance as to the accuracy or completeness of such included information. Save for RECHAINED Ltd., the Distributor and their respective directors, executive officers and employees, no person has provided his or her consent to the inclusion of his or her name and/ or other information attributed or perceived to be attributed to such person in connection therewith in this Whitepaper and no representation, warranty or undertaking is or purported to be provided as to the accuracy or completeness of such information by such person and such persons shall not be obliged to provide any updates on the same. While RECHAINED Ltd. have taken reasonable actions to ensure that the information is extracted accurately and in its proper context, RECHAINED Ltd. have not conducted any independent review of the information extracted from third party sources, verified the accuracy or completeness of such information or ascertained the underlying economic assumptions relied upon therein. Consequently, neither RECHAINED Ltd., the Distributor, nor their respective directors, executive officers and employees acting on their behalf makes any representation or warranty as to the accuracy or completeness of such information and shall not be obliged to provide any updates on the same.



# 14. References

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- [2] Higher Education Technology Landscape 2017 <http://www.eduventures.com/2017/02/introducing-2017-higher-education-technology-landscape/>
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