BitCourse White Paper

« Count as wasted
each day and each hour
in which you have learned nothing
or added nothing to your education. »
John Amos Comenius

BitCourse was created to solve the most pressing issues in the sphere of education and allow any individual consult with anybody else anywhere on the globe. The main obstacles slowing down the development in this area and the intellectual development of the human race in general are issues with communication and payments, as well as clients' lack of trust in their consultants and contractors. The goal of our company is to make education more affordable and to provide consulting opportunities to professionals in all branches of knowledge. In the present White Paper, we describe our platform, the solutions we have developed, the smart contract and the way it functions, as well as the code written for the program.

Fundamental terms:

1) **Instructor -** a teacher**,** a consultant, a trainer, or any person transferring information to a student.
2) **Student -** any person receiving information from the instructor.

We will use this terms to streamline the discourse, since using terms like "teacher" or "consultant" would not be fully appropriate in the context of our platform..

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1. Introduction

From the very dawn of humanity, people have searched for ways to transfer information from one generation to the next. At first it was done through epic poems and legends transmitted orally. At present, in our so-called information era, it is achieved via terabytes of data on the Internet, which are available to everyone. The Internet allows free and unlimited access to information for an unlimited number of people. The exchange of information and its correct presentation have always been the most powerful impetus for development in any society. This is the reason why the creation of schools in the 15-16th century is considered a true revolution in education. However, the sheer speed of development and information exchange eventually led to a veritable informational collapse. According to Professor Martin Hilbert from the University of South California, in 1986 an average person's daily intake of information roughly equalled the contents of 40 newspapers, by 2007 that amount had risen considerably and became "...equivalent to every person in the world reading 174 newspapers every day" Hilbert, Lopez, 2011. [1]

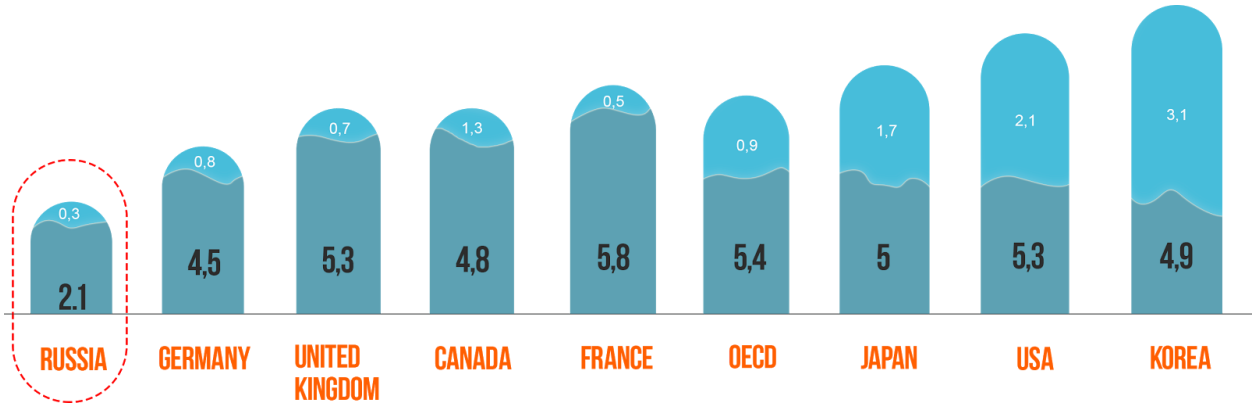
The development of science led to the emergence of new disciplines requiring detailed theoretical and practical studies. It is not enough to just learn the theory in a particular area or craft; one needs to have a detailed idea of all its subtleties. That is why a professional with an enormous experience can change the whole area in which he or she works, changing the course of human development in the process.

For example, the Russian-Canadian programmer Vitalik Buterin, after attending a great number of blockchain conferences, accumulated enough knowledge to create a sensational, revolutionary product - Ethereum blockchain technology. The business community realizes the importance of such innovations; that is why digital technologies constitute the most profitable area of business.

[1] https://www.factroom.ru/facts/1430

2.BitCourse platform and the current world situation

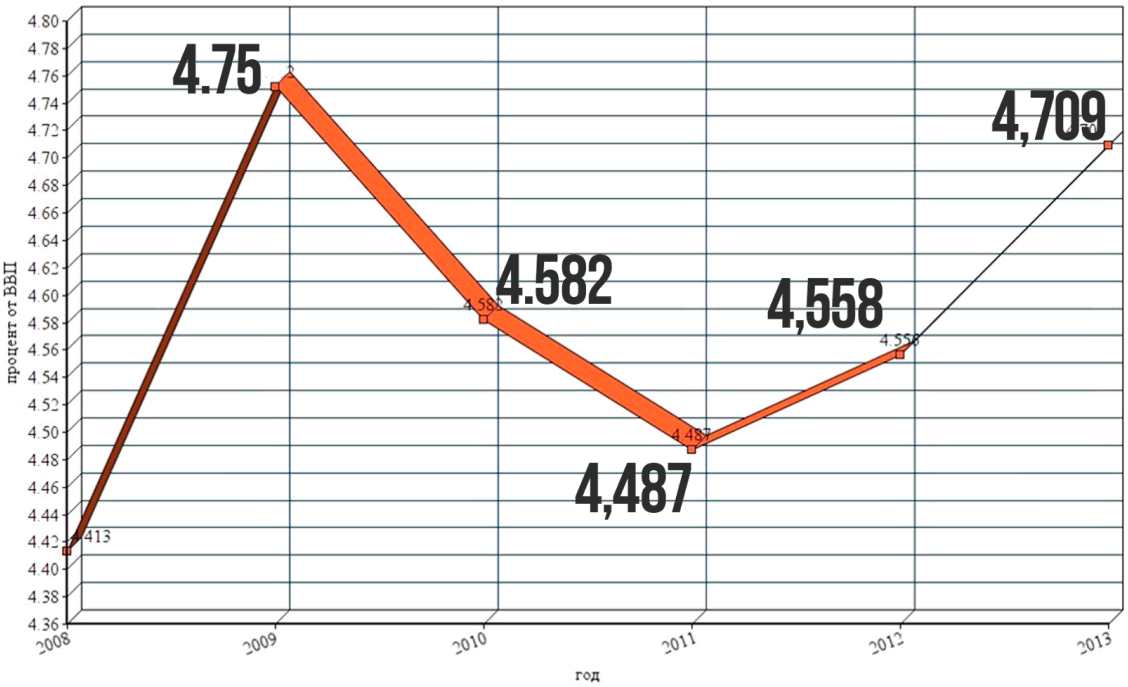
The problem of education constitutes a priority for almost any state and government; indeed, the education of the younger generations ensures the future of the state. Countries on all levels of development traditionally allocate significant portions of their income to maintain and improve the quality of education. The following statistics represents the expenses on education as a percentage of the country's GDP.



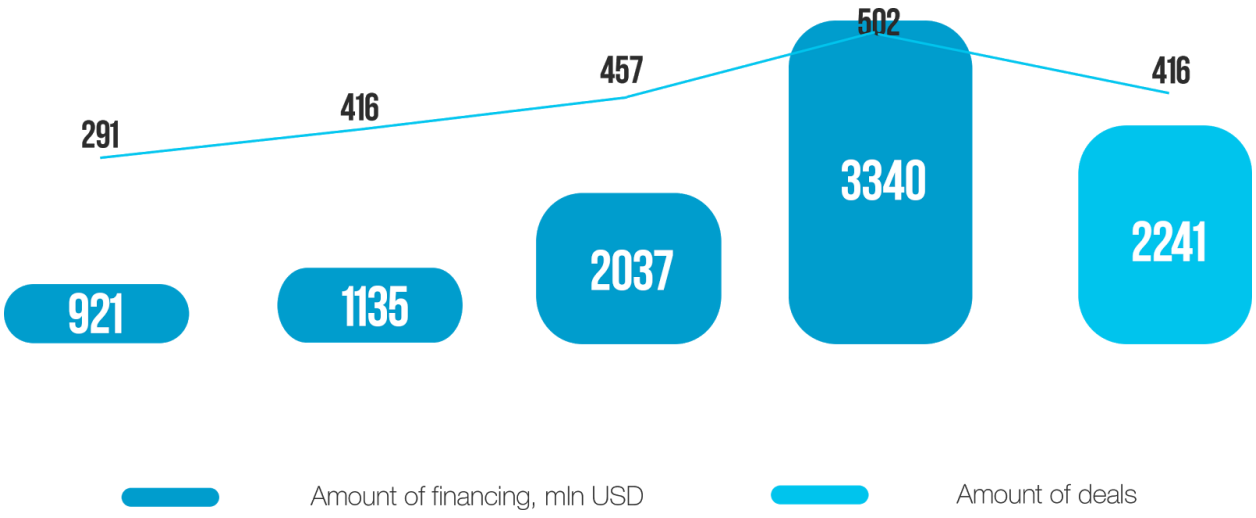
The main figures represent government expenditure, while additional figures on the top constitute private investment

Guatemala	24.1%	**Chile**	18.9%
Costa Rica	23.4%	**New Zealand**	18%
Vanuatu	22.3%	**Peru**	17.6%
Malawi	21.6%	**United Kingdom**	13.9%
Côte d'Ivoire	21.2%	**Belarus**	11.2%
Micronesia	20.7%	**Armenia**	10.7%
Indonesia	20.5%	**Bermuda**	9.0%

Average expenditure on education across the world at present constitutes 4.5% of the GDP. This figure tends to change slightly from year to year and hovers around 4% (data retrieved from http://data.uis.unesco.org/?queryid=181).



Another factor that demonstrates the market's interest in the development of education is the volume of venture investment.



The state is not the only agent interested in a high level of education for its citizens. A large number of NGOs regularly arrange additional qualification and certification training programs for their employees. Education is a dynamically evolving market, which attracts significant funds from both state and private sources.

We decided that a platform that would promote further development of the whole sphere of education could become an essential 21st-century technology. Our platform would allow anyone to acquire quality education, regardless of their physical location and, even more importantly, regardless of their budget. With our platform, a student could obtain a good education for the price of a **cup of coffee** - or for a price of a private jet, should the student require individual and exclusive training with the best professionals in the business, such as the **heavyweights from Wall Street.**

2.1. Analysis of the education market

We have gathered vast amounts of data regarding websites, online platforms, and video hostings that offer education services both for pay and for free, as well as about the range of courses offered.

For instance, YouTube, the most popular video hosting in the world, is used by many for self-education purposes, even though it does not have the necessary features and tools that would ensure productive learning. It provides access to either videos that show how one thing or another is done, or - at best - to live video channels, in which students can interact with instructors via a group chat. In the first case, payment is provided by means of ads preceding videos and YouTube's partner program.

In the second case, payment becomes a question of personal trust in the instructor and is sent to the account provided by the instructor. There is no agreement or a written guarantee that the tutorship will actually take place and student will not lose their money. Everything is based on trust and the instructor's reputation.

These approaches, while common on YouTube, limit the opportunities to increase the professional level of teaching and consulting service.

On the other hand, a new centralized education system, called GetCourse (https://getcourse.ru/prices), has a number of serious flaws that negatively influence the development on the market - it is those flaws that our platform can eliminate:

1. Membership fees. In order to use the platform, instructors are obliged to pay regular membership fees. A free 14-day trial period is granted. Of course, this is not enough for a new instructor to build up an audience and start a training group, but it is enough to get acquainted with the platform.

2. An absence of an arbitration system and high commissions.

3. An absence of a system of ratings, which could serve as a base for the functioning of the platform (more details in a later section of the White Paper).

4. Full centralization, which does not provide a solution of the trust issues among training participants.

We have discovered the same flaws when studying potential competitors of the GetCourse platform. To make the description clearer, we have divided them in accordance with their intended purpose:

General profile	Corporate Profile	Academic knowledge
Нетология Uniweb Zillion Stepik	Eduson Teachbase Skiliks ELC Courson	Универсариум Открытое образование Лекториум
Preschoolers	**Pupils and students**	**Language Places**
Babystep Iqsha DetiOnline	Интернетурок ЯКласс Clearmath МойУнивер	Lingualeo PuzzleEnglish SkyEng
Aggregators	**Programmers**	**EGE, OGE, etc.**
Eclass.cc Edumarket UniverTV	GeekBrains Hexlet HTML Академия	Maximumtest Фоксворд Bitclass

Our team was particularly interested to analyze the website https://upstudy.ru/ . We came to a unanimous conclusion that this website does a good job providing access to education services. It lists over 42 thousand professionals from across Russia, ready to not only teach a wide range of disciplines, but also to provide consultations on almost any issue - in finance, for example.

However, it is a predominantly offline platform, mostly offering education services on the premises of the instructor.

Here are the main inadequacies that characterize the education market in the context of the present state of technology:

1. Lack of access to the market, or a highly complicated procedure of access, for new and potentially top-class instructors.

As any professional, and instructor wishes to earn a profit - not to buy a big house or a posh car, but simply to live comfortably.

The present system only allows those instructors who are skilled at internet marketing and digital advertising to enter the market. However, instructors may possess great expertise in their area and yet be unable to promote and advertise their services properly. Global companies, on the other hand, have such skills, as well as the necessary budget for advertising and marketing events.

2. Trust-based approach excludes the possibility of large payments for online education services. A person desiring to obtain quality education (and willing to pay a lot of money for it) is constrained to meet with the instructor in person. We believe this to be an outdated approach, a feature of the previous century with its stereotypes and limitations for instructors. Our platform can provide the full range of interactive education services, both online and offline.

3. All the aforementioned points influence the most essential feature of any successful business or activity - the possibшlity of scaling and earning a fair (and high) reward for one's work. Money does not like promises; what it likes is a 100% guarantee of refund in the case the service is not provided.

2.2. Target audience

Target audience are all those individuals who are practically or potentially interested in purchasing a good or a service. All those people who could be interested in paying for our services are united by one thing: a desire to obtain knowledge or information. Once we define who could be interested in receiving new information or knowledge, we will get the definition of the BitCourse target audience.

This issue of target audience is a multifaceted one. It may seem that our platform is geared at scientific, technical, and professional education. Nonetheless, it is able to solve the problem of teaching practical and even amateur skills, such as fishing, fixing a car, or starting a business from scratch.

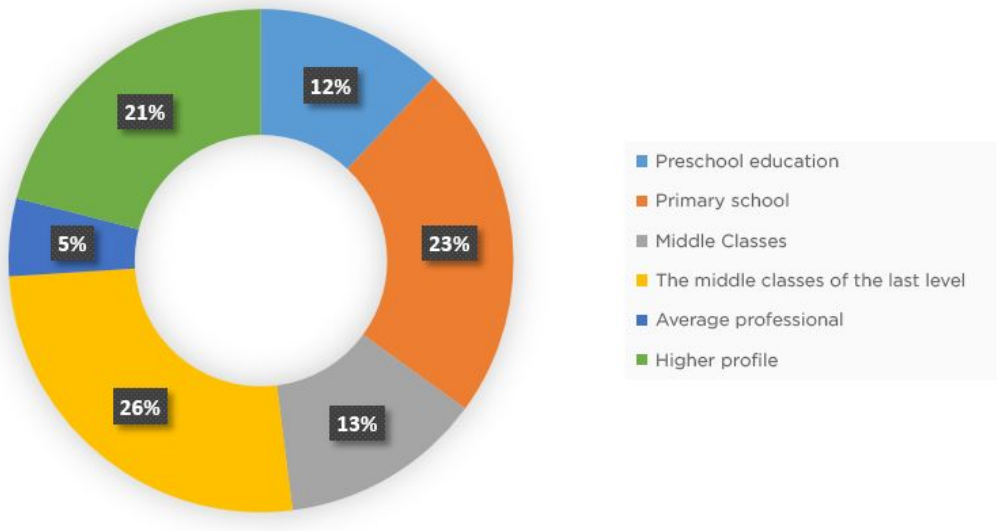
This approach leads us to divide our target audience into two groups.

The first group are all those people who know how to transmit information and how to receive it. Please note: these are not just people who are able to talk or listen. Our platform will also provide education for people with speech, vision, and hearing impairments. Viewed from this angle, any person belongs to our target audience.

The second group are **students** that have reached a certain age - those that require initial education to play a role in the society and to be accepted as an individual. The data was taken from the World Bank resources at data.worldbank.org. At the moment of publication, only data for 2016 was available; figures for 2017 have not yet been published.

We can divide these students according to several criteria:

Preschool age	**352042144**
Elementary school age	**687512896**
Middle school age	**375770784**
High school age	**756753792**
Technical school age	**149256208**
College age	**602313984**



Counted this way, our target audience comprises 2 923 649 808 people across the world. However, we disagree with this mode of calculation: we believe that all people should strive to be lifelong learners.

The third category includes private for-profit organizations that are interested in providing initial training to new employees, as well as in re-training their experienced employees and providing them with new qualifications.

According to an article by Kirill Palshin published in the Company/“Компания” magazine, Russian companies’ training budgets are extremely large. Every year, a company can allocate millions of dollars to send its employees to business schools and training centres. What’s more, these expenses are growing. According to various estimates, the Russian short-term training programs market is growing by 15-55% annually. When it comes to education expenses, Russian companies tend to follow Western trends, the difference being that Western business spend even more on training. As suggested by some data, U.S. companies spend over 50 billion dollars every year on educating their employees. The top 10% of U.S. firms provide training to 98% of their employees, and the majority of companies on the market try to follow suit: over 30 of all employees attend training programs paid for by the employer. In Europe, the level is equally high: for instance, in France business spend up to 30 billion USD a year on training, while companies in the UK allocate as much as 40 billion dollars for the purpose (retrieved from https://mediajobs.ru/management/skolko-biznes-tratit-..)

2.3. Problems of the education market

Based on our analysis of the education services market, we conclude that a clear and significant growth has take place in recent years, together with the emergence of new technology and new professions, which will become ever more attractive and popular in the future. Technology is moving forward and renewing itself; however, the same cannot be said about education. Both the educational methods and the information taught at the universities do not correspond to the existing practical needs. This is detrimental to business, which have to spend from 6 months to a year training a newly-hired university graduate, depending on the company’s sphere of activity. Thus, companies are forced to waste their money and time, either allocating coaches from among their employees or paying for expensive training programs for their new employees. Moreover, once the money and time has been spent, there is no guarantee that the employee will remain with the company long enough to cover the expenses. In over 50% of cases, the employee soon leaves, resulting in a waste of resources for the business, which has to begin the process from scratch.

Our century is a time when the quality of information becomes a decisive factor, both in terms of its practical value and the speed with which it can be acquired (which, of course, depends on the individual).

With the current speed of market development, a school graduate who possesses a certain limited amount of knowledge and gets hired will find that his or her knowledge becomes insufficient or obsolete after only 6 months of work. This is one of the most pressing contemporary issues; our proposed solution is outlined below. In the following sections, we will describe a further series of issues, together with suggested solutions.

3. BitCourse as a unified education and consulting platform

BitCourse will serve as a unique meeting place, where experts in a variety of narrow fields will be able to teach or consult students from anywhere in the world.

Any user concerned with obtaining education or a consultation will instantly think of BitCourse, knowing that it is there that the world's leading instructors teach and top consulting companies provide consultations; while a specially designed smart contract will allow the participants to send and receive large payments.

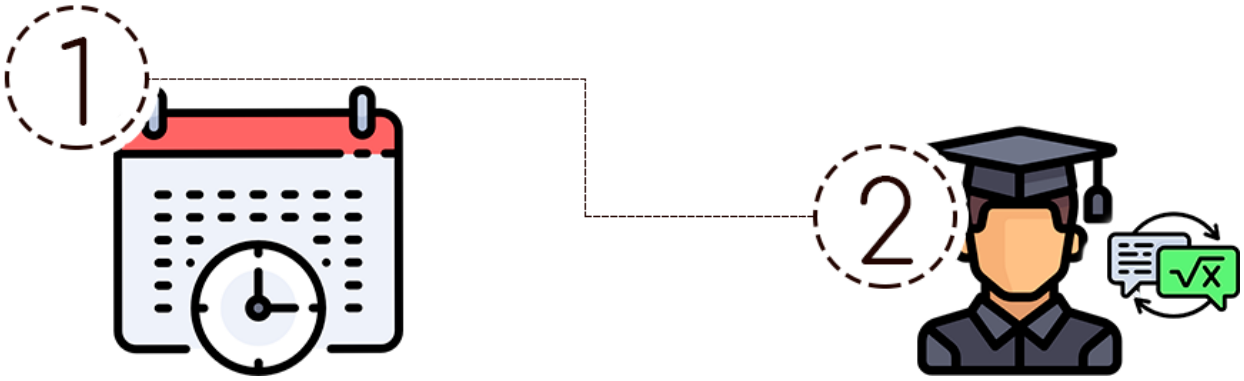
Our solution for the issues described above makes us different from the competition in numerous ways:

1. A decentralized system.
2. Transparent transactions and pricing.
3. Absence of commissions.
4. A system of ratings for both instructors and students.
5. An open history of teaching and consulting projects.
6. An arbitration system for conflict resolution.
7. An auction system for forming listings of services.
8. An adaptive and intuitive interface of the site.
9. Accumulation of all knowledge on one platform.

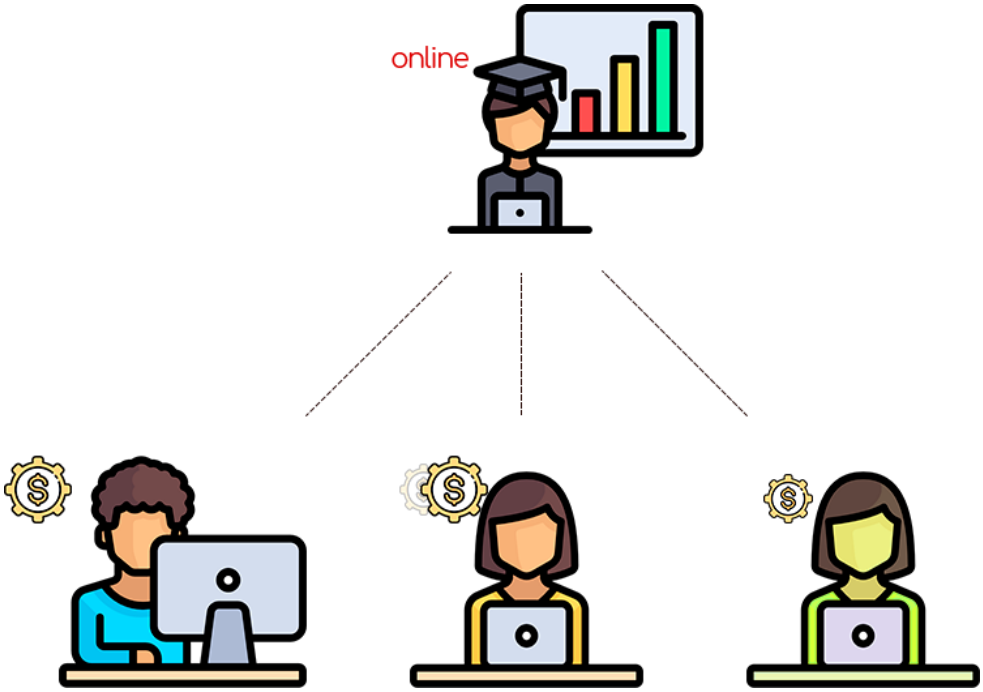
In order to start teaching or consulting through our platform, it is enough to register and add credit to one's personal account, which will act as a deposit in case of any possible issues during the teaching process (more on that below), and create a teaching area.

3.1. How does it work?

Our platform is designed to be flexible and to be able to accommodate the instructors' and students' requirements and capacities for learning and retraining. In this section, we will describe how our platform works, starting from the basics and moving toward more complex features. Depending on the preferences of the parties, education can come in various forms:



1. Private tutorship or consultations. This one is easy: the Instructor creates a teaching area and waits for the Student to sign in. Upon signing in, the Student receives the tutorship.



2. Fully interactive training with an unlimited number of students. For example, the Instructor could set the following conditions:

Math lessons. Duration of a lesson is **2** hours. A lesson will commence if at least **1000 USD** is collected by **9am**. Minimal fee per student is **10 cents**.

This approach allows to attract an unlimited number of students with various budgets: while a student of modest means might pay only 10 cents, a more well-to-do student (perhaps driven by altruistic intentions) could pay 1 USD to enter the class.

3. Yet another mode of group learning could be partially conducted offline. The main difference from the second case (standard group learning) is that students can also be physically present in a classroom, while the teacher would be virtually present, providing online education.

This is only a basic description of our platform. Please note that it constitutes only 5% of the features it would have in case it were centralized!

BitCourse is a decentralized platform. Will we really succeed in obtaining the effect described in this section? How and why would we be able to provide the service? Is there a real need in such a platform? The following sections of this White Paper provide answers to these questions. We have chosen the "issue-solution" format for our presentation. However, first we would like to describe our target audience.

3.2. Issues of instructors' professionalism. Competence and certification.

We want our instructors to provide only high-quality professional services. Unfortunately, due to the existing language barriers and differences in systems of education in various states, as well as due to the practical impossibility to check the veracity of licenses, diplomas and certificates, we cannot test the instructor's' expertise in his or her areas of study.

Moreover, often the best experts are not those who have been awarded an official diploma. On the other hand, we cannot run the risk that our platform will cause harm to its users. Indeed, wrong or misleading information can be seen as a poison that acts either instantly or after a certain period of time. That is why every instructor will have the option of uploading their diplomas and certificates to their profile.

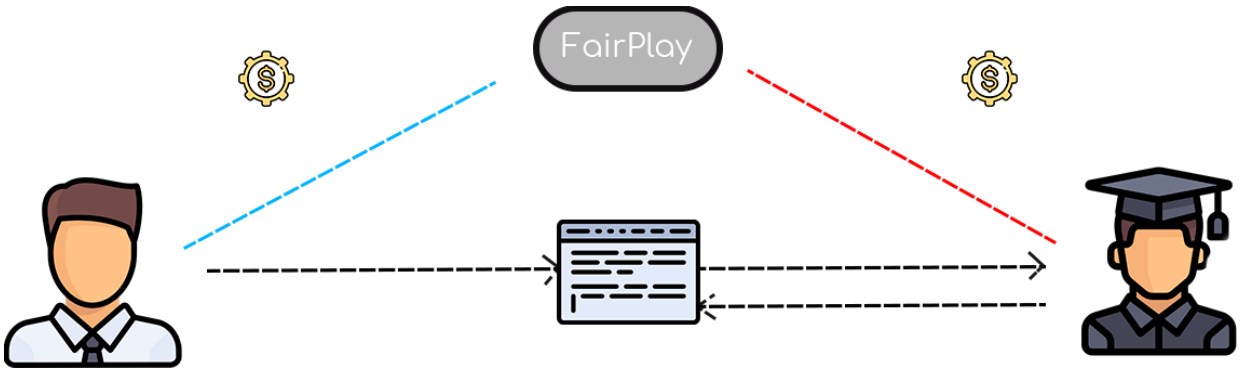
Instructors will not be allowed to hide this information from other users. If a user finds no information on the platform about a certain instructor, it means that the instructor is either unwilling to show his or her certifications or is simply incompetent.

3.3. Payment issues

As with all other services provided over the Internet, the parties require an intermediary to act as a guarantor and store the customer's funds until the service is provided. The presence of a guarantor assures the parties that their interests are protected.

For the client it means a guarantee of receiving a full and satisfactory service, while for the service provider it means a guarantee of a timely payment. Various existing services employ solutions that differ in name but not in concept. For example, the website Freelance.ru offers the parties to use a service called FairPlay when concluding a deal. A working area is created, in which the client describes the task and assigns it to a provider, while the latter confirms that the assignment will be completed in full. One party - the customer - transfers the money into the company's account. The company (website) acts as a safe that stores the customer's money and at the same time guarantees payment to the provider.

Once the assignment is completed, the provider creates a notification and uploads the resulting files in the working area. The customer checks the result and lists any possible critical remarks in the working area, after which the service provider makes revisions. Only after the customer fully confirms that the work is completed, the provider receives the payment. Conflicts are resolved by the guarantor company.



In case of goods exchange, a very similar system called Safepay is used: it additionally registers the fact of goods' transportation and details of their transportation by third parties.

In both cases, a fee is charged, calculated as a percentage of the transaction value. Our platform allows to guarantee the protection of both parties' rights in a decentralized manner.

3.3.1. BitCourse as a safe for both instructors and students

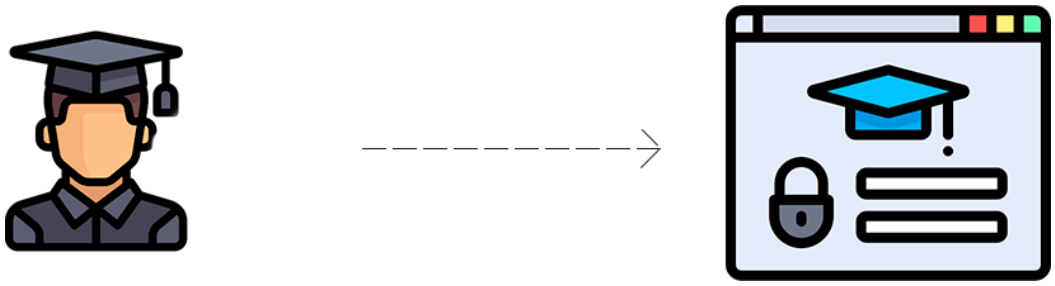
The Ethereum platform provides so-called smart contracts - programs stored on the Ethereum blockchain that can be executed autonomously to perform complex transactions. A smart contract can be executed independently from any third party, as long as it is programmed to self-execute as soon as certain conditions are met.

The development of the Ethereum blockchain allows to create decentralized applications whose full or partial back-end code employs a decentralized registry with a user interface, which ensures comfortable interaction with the blockchain.

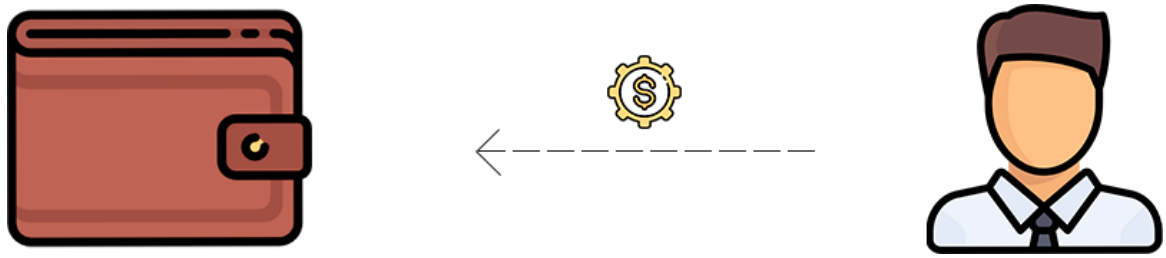
At the moment, blockchain is the safest available technology for digital asset transfer, thanks to its distributed character and complex cryptography. In order to abort, cancel, or change a transaction, one would have the hack the whole system, which is secured and stored in the node wallets and is supervised by miners. Thus, no third party is able to intervene in the execution of smart contracts.

All payments for education and consulting will be performed using smart contracts. Here is how it will work:

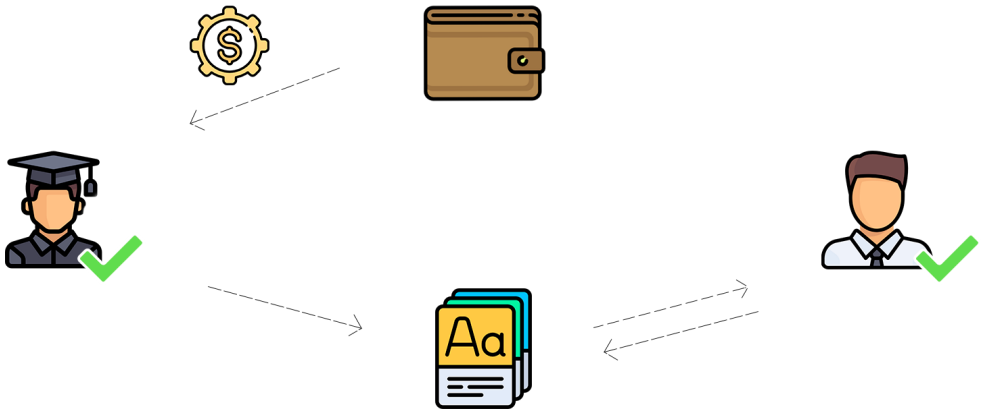
First, a teaching or consultation area is created.



The customer transfers the company's tokens to the platform's wallet. Unlike FairPlay, for example, our platform will not charge a fee for storing tokens.



The service provider next contacts the customer via video, audio, or a chat, depending on the parties' agreement. Once the work is completed, the parties confirm that the service has been provided in full



If a conflict arises between the parties, it is put up for arbitration to the users with the highest rating. For the terms and procedure of conflict resolution by rating arbitrators, see the next section.

If the parties manage to reach an agreement and click the button "I agree", a smart contract will be executed, and tokens will be transferred to the service provider. Thanks to the decentralization and the implementation of smart contracts, the system becomes truly independent, and the fee for its use is reduced to a minimum.

These are the main differences between our smart contract and those of other guarantor systems:

Criterion	BitCourse	Other guarantor systems
Stores funds till the customer confirms that services are received	✔	✔
Payment is transferred to the provider upon both parties' agreement	✔	✔
Money storage location	Decentralized, by means of **Ethereum** smart contracts	Centralized, in an account in the system
Fee for storing funds	–	✔
Conflict resolution system	A unique and advanced conflict resolution system, in which any users with a high enough rating (assigned by other users) can act as arbitrators	Employees of the system resolve conflicts, usually blindly seeking to satisfy the client

Technical features of the system are described in more detail in a later section.

3.4. Language barrier

One of the main factors complicating the education process is the language barrier. Unfortunately, obtaining a truly high-quality education in the UK, Germany, or the Netherlands is only possible if one is a native speaker of the language in which the teaching is done. The availability of education is limited by linguistic barriers, which sometimes can be overcome only by means of professional translation. Every language has its dialects, slang, and idioms. It is these stylistic quirks that impart uniqueness and historical individuality to a language. They are hard for a non-professional translator to understand; on the other hand, an absence of a precise and correct translation creates misunderstandings between people and, as a result, reduces the quality of teaching or consulting services. For example, someone might hear the phrase "forget-me-not" and take it for a plea of a forlorn lover; in reality, it is just a common blue flower

found in any forest. This is just one example of how the uniquely idiomatic nature of any language complicates the reception of information.

Professional lingo contains numerous scientific terms, and business usually employ highly specialized translators who not only know the language, but have mastered the specific vocabulary in a given area. There are dedicated dictionaries devoted to law, medicine, engineering, etc. Our platform allows the parties to use the services of a translator in the process of tutorship or consulting. Of course, such services will need to be paid for separately, but we have developed a market-like mechanism of interaction, enabling the parties to agree on the reward for a translator, to be paid in tokens, a rating, or a review, thus helping the translator build a good work history.

3.5. Currency barrier

Another important barrier is that of currency. Education and consulting services have to be paid for with a liquid currency that can be later exchanged for goods wherever recipients find themselves. On the other hand, a student may not have the time, expertise, or possibility to obtain the currency that the instructor prefers and make a payment in that currency. Limitations introduced by local and international authorities might constitute yet another obstacle. Existing payment systems charge fees for using their services. Moreover, the time necessary for a payment to arrive in the instructor's account can become a problem. Thanks to the blockchain technology, this issue is solved autonomously and quickly. You will find further details in section 3.3 (Payment issues).

3.6. Absence of independent arbitration for conflict resolution

Practically all existing online systems that sell goods or services lack a truly independent institution of arbitration that could resolve a conflict situation and provide a final settlement of a dispute.

As a rule, the administrator of a website seeks to act as arbitrator. This may seem undemocratic to the users, creating a sense of insecurity and preventing users from feeling responsible for their actions on the platform. The administrator's logic is sometimes hard to decipher, and his or her unlimited power can lead to despotic impunity. Limiting the administrator's power leads to anarchy on the platform; expanding this power gives rise to dictatorship. The arbitrator position is occupied not by someone who has gained users' trust, but by a person chosen and approved by the company's executives. Such a situation cannot possibly instill trust in wealthy users. Where is the guarantee that one will receive their money back if the service turns out to be of a sub-par quality or is not provided at all? Unless a company has a detailed, clear, and confident answer to this question, which would fully describe

how the client's rights are safeguarded, a customer will not risk paying a large sum, instead paying only what he or she is not afraid to lose. Normally, it means a small amount.

3.6.1. BitCourse conflict resolution system

ДIn order for the platform to function correctly, it is necessary to create an adequate, fair, and legitimate system of arbitration. This issue can be solved only by democratic means: a vote that would empower the people (or, in our case, the users) to express their will and their level of trust in specified candidates. Depending on the country, judges are either named by authorities (who are themselves elected by means of a vote or a referendum) or elected directly by a general vote. No digital system can replace the system of justice - which is, after all, the prerogative of each sovereign state - but in order for the platform to work efficiently and achieve its goals, an arbitration committee must be created.

The procedure of selecting arbitrators for the platform is based on the following principles:

1. Election by vote.

2. Full trust and authority based on integrity.

3. Rating as a reflection of competence.

4. Replacement in case of a loss of trust.

5. Independent decision making..

In case of a conflict between the customer and the service provider related to the teaching or consulting process, the dispute is put up for arbitration to a committee of 15 members. The uneven number ensures that a decision will be taken once a majority of over 50% is reached.

Arbitrators are to be selected automatically by the system and need to satisfy the following criteria:

1. Highest ratings among the users of the system

2. Absence of no-confidence votes in the preceding 24 hours

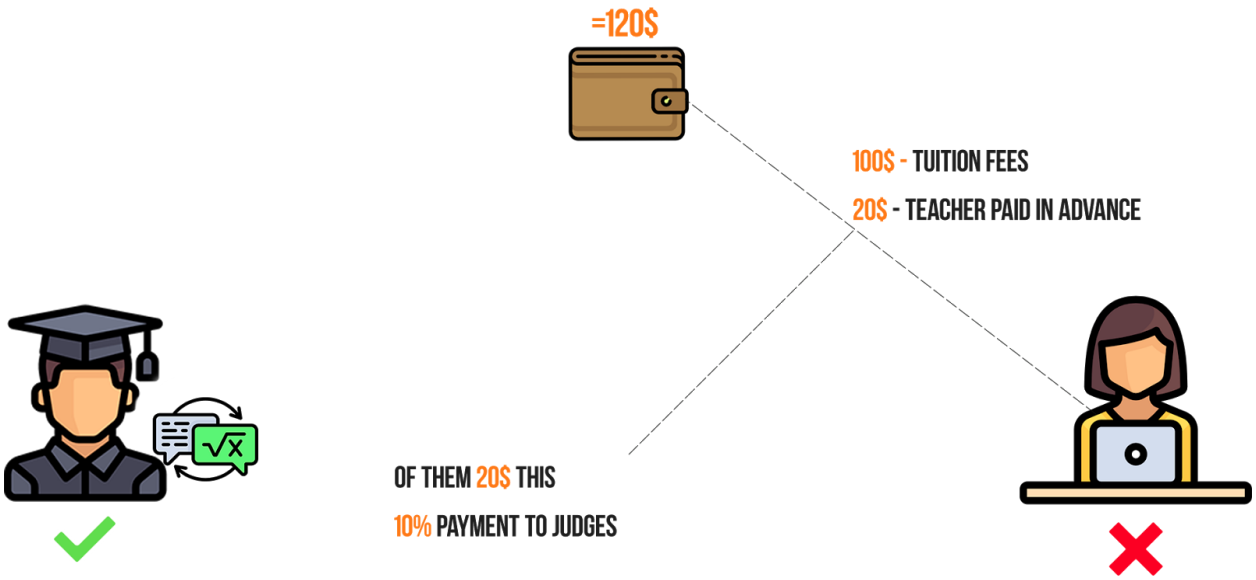
3. Agreement to participate as an arbitrator

An arbitrator is paid from the parties's wallet created for a particular consulting or teaching project. The party that clicks the "I do not agree" button and wishes to submit the dispute for arbitration has to pay a deposit amounting to 20% of the funds in the wallet created for the

teaching project. An exception to this rule is the instructor, who must make an advance payment of 10% of the value of the services, to be used in case of an arbitration. These 20% are divided between the committee members as a reward for providing a settlement if the decision is made NOT in favor of the party which had requested an arbitration. If the case is settled in favor of the plaintiff, the other party is to pay 20% to the arbitrators.

The creators of the platform seek to prevent serious disputes from arising; for this reason, the arbitration fee is set rather high. Parties should first seek to resolve their disagreement by means of negotiation.

The arbitration fee will provide the parties with the motivation to settle their conflict peacefully; after all, conflicts in the education and consulting spheres are usually a result of dishonest actions, rather than a true breach of fundamental rights.



3.6.2. Misinterpretation risks in the education process

Conflict situations that may arise on the platform will not be too complex or require specialized knowledge from the person authorized to resolve them. All the criteria that the desired education or consulting services must satisfy are described by the designated service provider at the start of a project. Thus, the instructor bears the risks related to an incorrect description of the service.

In the process of conflict resolution, members of the arbitration committee will need to determine if the education or consulting service has been provided. The question of its quality is subjective and cannot be resolved by the arbitrators. In order for the instructor to receive due

payment for the education of consultation, it will be enough to determine that the teaching session in question has taken place.

3.6.3. Arbitration committee membership

Members of the arbitration committee are selected anew for each case, based on users' relative positions in the general rating. Once a user is nominated for the committee, he or she receives a notification in their personal account area. If the user confirms their participation, he or she is appointed as an arbitrator for a particular dispute. If the user declines of ignores the notification for longer than 30 minutes, the system selects the user with next-highest rating.

Half of the arbitration committee members will consist of instructors, while the other half will be constituted by students. This will allow to achieve a balanced representation of the parties' interests, elicit the trust of the platform members, and eliminate the possibility that one group could exercise power over the other.

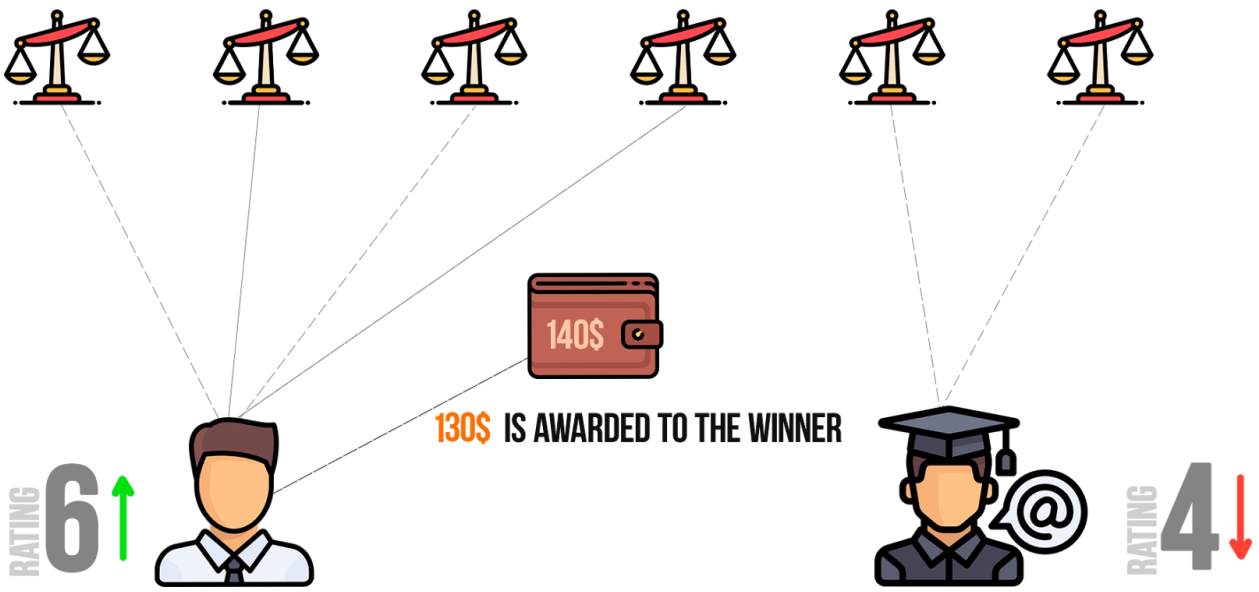
3.6.4. Voting procedure

Once the list of members has been established, the dispute is put up for a vote. Each arbitrator must vote in favor of one of the parties within 10 hours from the start of the voting process. If one or more of the members fail to submit their votes, the system suspends the vote, passes a no-confidence motion against the arbitrator who has failed to vote, and starts the selection of a new committee member. After confirming his or her participation, the new arbitrator must vote within 30 minutes. If that does not happen, the selection process is repeated.

After the vote, the results are announced, tokens are transferred to the winner, 10% of the value of the services is automatically distributed among the arbitrators.

If one of the parties considers that the decision of a particular arbitrator was biased, the party has the right to propose a no-confidence motion against the arbitrator. In this case, a special no-confidence session is launched, the procedure being as follows: in the 5 hours after the start of the no-confidence session, the arbitrator in question must receive over 60% negative reviews of his or her performance during the original arbitration.

If it is decided that the arbitrator in question has lost the confidence of his or her peers, a no-confidence motion is passed, the arbitrator is barred from voting for the next 24 hours and has 5% subtracted from their rating. If an arbitrator loses a no-confidence vote more than five times throughout the whole duration of their membership on the platform, he or she receives a no-confidence status for a month. If a no-confidence motion is passed more than 10 times, the user loses the right to act as an arbitrator indefinitely.



3.7.Training of company employees.

In section 2.2. Of the White Paper, we mention as the third category of the target audiences those for-profit organisations that spend a considerable percentage of their revenue on training their employees.

Reasons that induce business to train their employees:

Recent graduates who only begin their career require an initial training, since they simply have no experience. Their knowledge is limited to pure theory.

The society and the market are developing fast, and the knowledge received two years ago is already obsolete. Emplyees require repeated training that provides up-to-date information. For instance, it is common practice among legal firms to arrange weekly learning sessions conducted by managers and devoted to the latest changes in legal norms and practice.

At times an employee may not be able to perform his or her tasks and needs to be trained in order to reach the level of productivity required by the organisation. In rare cases, a personal coach may be assigned to the employee.

By training the employees at its own expense, a company wastes time and money. An average business will usually entrust more experienced employees to teach newly hired team members. This way, the employee acting as a coach spends a lot of time teaching instead of working productively at his or her tasks, which results in lost revenue for the company.

Once the introductory training is completed, the new employee can begin working. In circa 30% of cases, the employee's working results are unsatisfactory, and he or she has to be either trained more or fired. Besides, the employee may choose to resign for various reasons. As a result, the company can suffer significant losses.

Our platform will provide instructors in possession of the most up-to-date and useful knowledge. Training employees online will turn out much easier and several times cheaper than offline. Managers will be able to choose the best instructor among the thousands available by organising a tender. The winner of such a tender will be assigned to training the company's staff.

3.7.1.New experience for new employees in BitCourse.

Choosing the best instructor among thousands present on the platform will be easy thanks to a system of ratings. It will be possible to choose the instructor with the highest rating and offer the job to him or her directly, as well as choose one with an average rating and a lower rate. Once the training project is completed, the instructor will be able to report to the manager on the results onlin.

Businesses will receive a great opportunity to train their employees using our platform. The level of their employees' qualification will rise, and training expenses will fall.

The value of the company's tokens will grow due to increasing volumes of services traded on the platform; at the same time, the total number of tokens available to the participants to execute payments will remain unchanged.

4. Education and consulting system

Education process on the platform will be interactive. Instructors will be able to use videos, photos, an interactive whiteboard, a timer, etc. The platform will provide all the features common in traditional offline education. The student will have the option to reward the instructor or consultant with a bonus during a learning session, ask additional questions, and interact with the instructor. Teaching can be performed both individually and in small or large groups.

In case of individual lessons or consultations, the parties will have the option of signing a confidentiality agreement. When teaching in a small group, the maximum number of students is determined in advance by the instructor. Group learning and consultations are directed at an unlimited number of users, and any user has the right to join a session.

Main features of the smart contract are described in section 3.3., as well as in section 5 (Technical structure).

4.2. System of ratings

We believe that a system of ratings is the only way to form an idea about a user's competence in the completely anonymous world of the Internet. That is why it is essential to apply clear and fair criteria when assigning a rating to a user. Ratings can increase or decrease based on the level approval of a project member's actions by other users of the project. A good rating cannot be bought, it can only be earned by performing actions that benefit the community. A rating increases as follows:

1) +1 from another user for each education or consulting service provided;
2) +1 from another user who wishes to express their approval of the participant's profile;
3) +5 for completing a teaching project without a conflict;
4) +10 for participation as an arbitrator;
5) +30 if the user is subjected to a no-confidence vote but is subsequently cleared (i.e., the no-confidence motion is not passed)

Rating can be decreased as follows:

) -1 from another user for each education or consulting service provided;

2) -1 from another user who wishes to express their disapproval of the participant's profile;

3) -10 in case of a lost arbitration

4) -20 in case of a loss in an arbitration initiated by the user him/herself

5) -20 if no-confidence proceedings are launched against the user;

5) -5 if a no-confidence motion is passed

4.3. Member registration

Registration of both students and instructors will operate using a private key, just like with the registration of any online wallet. A user's account will act as such a wallet.

There is no obligatory information that a student must provide. Any citizen of any country will be able to register. A student is only asked to specify the preferred language of instruction.

Additional requirements apply to the registration of instructors. An instructor must specify or upload a college diploma, a professional certificate, or any other document that allows to determine the level of the instructor's competence. It is up to the instructor to fill this part of the profile.

Instructors are obliged to respect the terms of existing international agreements and the legislation of the country where the information provided by the instructor will be used. For example, when teaching medicine, an instructor is obliged to mention possible side effects or the necessity to consult a physician.

5. System structure

The technological part of the BitCourse platform development will consist of two stages:

1. Partially decentralized system
2. Decentralized system

At the moment, existing blockchain solutions do not allow to create a fully decentralized and stable high-quality product; for this reason, the first several versions of BitCourse will contain traditional centralized features, necessary to achieve the following objectives:

1. Store a large volume of data and maintain a quick and flexible access to this data;

2. Reduce the number of gas spent by users and by the system to store information and perform operations employing secondary data and functions;
3. Make the platform's performance faster;
4. Reduce the load on the Ethereum platform.

5.1. Main components

Ethereum blockchain - the platform on which the whole decentralized BitCourse structure is to be realized by means of smart contracts.

Smart contracts - specially developed algorithms designed to ensure a transparent, secure, and efficient performance of the platform.

Truffle - a smart contract development framework for Ethereum, allowing to simplify the process of designing, compilation, implementation, and testing.

Open-Zeppelin - a framework developed by the Zeppelin Solutions audit firm, which includes a set of secure contracts and libraries written using the Solidity language.

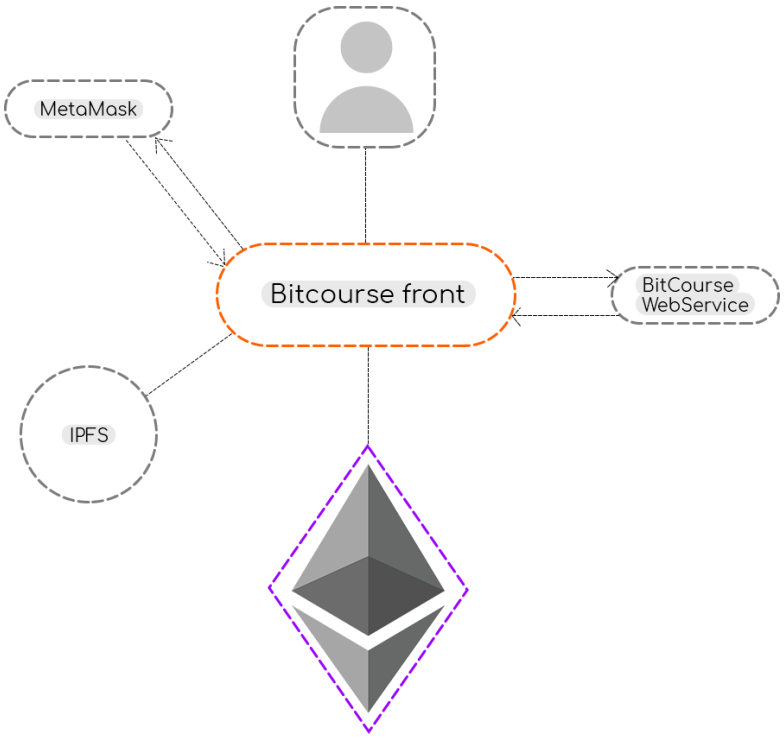
Auth/uPort – system of authentification of BitCourse users. It will be divided in two steps: a custom solution designed by our company and the uPort application.

IPFS - a peer-to-peer hypermedia distribution protocol addressed by content and identities. It will be employed by the platform for storing and accessing large and important files. The future video ююю system will be based on the IPFS data storage protocol.

BitCourse Front - the main tool for interaction among users and between users and authorization and data storage services. It constitutes a connecting link in the process of creating teaching areas, attending teaching sessions, payment, and contesting the quality of services provided.

MetaMask – a browser extension for accessing decentralized apps. Enables users to interact with the Ethereum blockchain without the necessity to deploy a full node locally.

BitCourse WebService – service for storage and exchange of secondary data that - for strategic and financial reasons - should not be stored on the blockchain. WebService is responsible for storing structured data for the purposes of fast search and access (using SQL/NoSQL databases), messaging, and storing additional user information.



5.2. Smart contract architecture

The decentralized part of the BitCourse platform uses the Ethereum blockchain and consists of a set of smart contracts that provide technological advantages over similar solutions present on the market: the payment is processed independently from the company's centralized servers via a peer-to-peer protocol (P2P), which guarantees a level of transparency and efficiency that so far cannot be realized using other technological solutions.

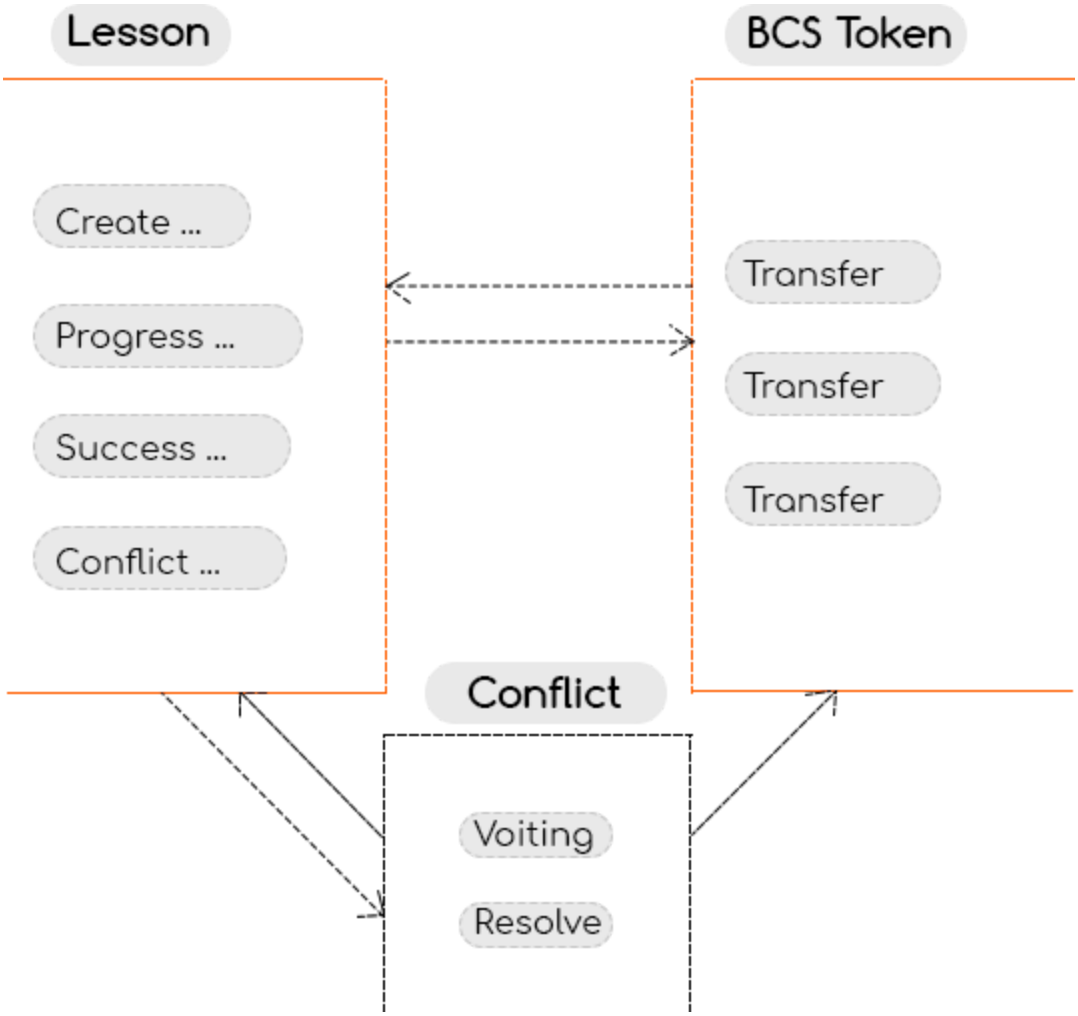
Smart contracts are program algorithms that are based on the blockchain and self-execute as soon as a predefined set of conditions are met. All performed transactions are recorded in a distributed storage and remain unchanged. Unlike traditional contract agreements, smart contracts not only contain information on liabilities of the parties and fines for contract infringement, but are able to automatically enforce the compliance with the contract's terms.

This technological framework is the key to the BitCourse platform, where a set of contracts enables to create an environment of trust and confidence among users. This is a great advantage of decentralized applications: with a correct approach, one can build a system that is regulated by users and serves users, and not just its founders. Here at BitCourse, we are going to build just such a system.

5.2.1. BitCourse contracts

The following smart contracts are being developed (or will be developed) to ensure the proper performance of the platform:

1. BCS tokens
2. Lesson
3. Conflict



5.2.2. BCS tokens

A BCS token is a smart contract designed in compliance with the ERC-20 standard, which will permit its easy integration into user interfaces. BCS, as well as the majority of our contracts,

is being developed on the basis of the Open-Zeppelin framework, since we view the security and efficiency of the system's components as our top priority.

Since all transactions within the platform will be paid for with our tokens, the BCS contract can be used as means of payment for the rest of our contracts (Lesson, Conflict). Considering the fact that paying for tokens in the Ethereum system can be complicated, our team has developed a set of solutions that allow to perform it as a single operation (more details below).

5.2.3. Lesson

Lesson acts as the main contract describing the interaction between the instructor and the student. It is an algorithm that controls the creation of teaching areas, the process of conducting teaching and consulting sessions, and execution of payments for each learning session. Every time a new lesson is created, a Lesson contract is executed on the Ethereum platform on behalf of the instructor, specifying the identity of the student and the price:

```
function Lesson(address _student, uint256 _price) {
instructor = msg.sender;
      Student = _student;
price = _price;
state = State.Created;
}
```

A lesson consists of a series of states that change as the teaching project progresses, describing the current status of the contract:

```
enum State { Created, InProgress, Success, Conflict, Solved }
```

The Lesson contract functions as follows:

- Upon a preliminary agreement with the student, the instructor creates a contract (which includes the student's address and the price of the lesson) using BitCourse Front and uploads it to Ethereum; the contract acquires the Created status;
- The student, having read the contents of the contract, confirms his or her participation and transfers the necessary amount of tokens into the contract's account, where they will remain in storage until the completion of the lesson; the status of the lesson changes to Inprogress:

```
function applyLesson() inState(State.Created) {
      uint256 balance = token.balanceOf(this);
      require(balance == price);
      state = State.InProgress;
}
```

- The instructor and the student conduct the learning session in any agreed-upon form; it is in the instructor's best interest to record and register the fact that the lesson has indeed taken place, in case a conflict arises;
- If the learning session is concluded successfully, the student confirms that the lesson has taken place, and the contract transfers all the tokens into the instructor's account; the lesson is considered successfully completed, and its status is changed to Success;
- In case of failure (such as when a lesson takes place only in part or not at all), a student deploys the conflict protocol; a conflict is an extreme situation in the context of our platform, since the whole BitCourse environment is designed to create trust-based relationships. A Conflict contract is created, and the lesson's status is changed to Conflict;
- The instructor and the student present their proof, and arbitrators vote to determine the winner; the status of the lesson changes to Solved.

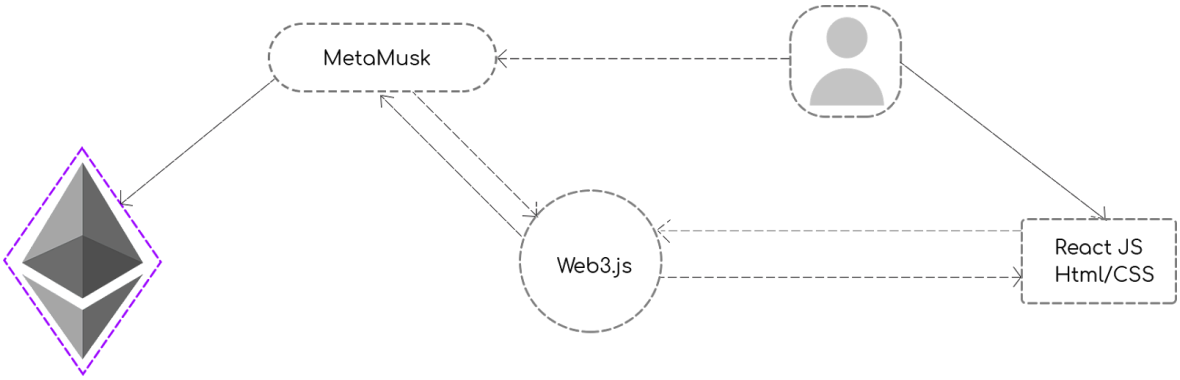
Lesson is a generic contract: it describes a general scheme of working with lessons. Specialized types of contracts exist for the two main types of teaching sessions: **IndividualLesson** and **GroupLesson**.

5.2.4. Conflict

A Conflict contract is created when a dispute arises at some point in the teaching process. It is a program algorithm describing the procedure of independent voting by the platform users. To objective of this contract is a fair and transparent arbitration executed via decentralized tools in order to guarantee transparent regulation of conflicts.

5.3. BitCourse Front

BitCourse Front - is a web application that enables users to interact with the Ethereum system, with each other, and with BItCourse WebService. The Front app consists of two principal layers:



Interaction layer for working with the blockchain, smart contracts, and users' wallets. It is designed using the web3.js JawaScript library, which allows to work with API Ethereum by means of the JSON-RPC protocol. The MetaMask plugin permits users to use their Ethereum wallets and BCS tokens. It is employed in all blockchain-related operations, such as:

1. Buying tokens
2. Creating lessons
3. Smart contract status updates
4. Paying for lessons
5. Voting.

Interaction layer for communicating with other users and accessing secondary data. This is a more traditional web application, written using React JS JawaScript framework. It is employed in interactions with BitCourse WebService, which serves to authorize users, edit private details, index and search the system, allow users to communicate, and transmit secondary data.

5.4. BitCourse WebService

One of the key features of fully decentralized applications is their relative lack of complexity and, as a result, their inability to operate large volumes of data. Numerous solutions of this issue have been suggested, such as the IPFS protocol, but all these solutions are either too raw or still in the development stage; as a result, a company will often begin attracting investment, even though its technical documentation lists components that will not be implemented until some point in the future. At BitCourse, we are designing a system that can start working and benefiting users immediately, thus making the platform's performance

independent from the launch of any third-party products. This means a necessity to use centralized solutions at the present stage of technological development.

Considering the potentially prohibitive costs of using the blockchain technology to store all of the platform's data and as a base for all, even insignificant, interactions between users, we are going to implement a component called WebService.

BitCourse WebService is a Spring Boot application written using Java language and Spring framework. Data are stored in a PostgreSQL database. Here are the fain functions of the WebService app:

Operations with users' secondary data;
Creation of notifications
Indexation and fast search across lessons, applications, and participants
Instant messaging
Data structuring

BitCourse components are designed to allow the platform to save and store all important ongoing operations in case of an error or failure of Front and Service apps; all states remain unchanged, and the main features can maintain their functionality even in the absence of a working UI interface, by using Ethereum wallets that support the ERC-20 protocol. For this reason, BitCourse - even at is initial, partially decentralized stage - retains all the advantages of fully decentralized applications.

6. Business model

Fees charged by the platform are planned to be minimal; however, the sheer volume of transactions. The system will charge the following fees:

1. 0.5% of the value of every transaction performed on the platform;

2. 0.5% of the value of every transaction performed on the platform;

3. After each arbitrated settlement of a conflict, the losing party will be obliged to pay 20% of the value of the disputed services. Half of this sum is to be distributed among the arbitrators as a reward for their work. The other half is transferred to the platform as a punishment for the losing party.

4. A mini-exchange will exist within the platform in order to simplify the process of buying tokens to pay for education. Tokens will be sold for their current price on the general exchange market, and a 0.2% fee will be charged.

7. BitCourse Tokens (BCS)

BitCourse Tokens (BCS) are designed to provide access to the smart contract to pay for teaching and consulting services, to pay bonuses, as well as to reward arbitrators for resolving disputes arising on the platform.

BCS tokens comply with the ERC-20 standard, which allows for their easy integration into users' wallets. The objective of the platform is to eliminate the element of mistrust between students and instructors; for this reason, BCS tokens will be the only means of payment. The teaching services provided by instructors, as well as arbitrators' rewards, will be paid for with BCS tokens only.

Execution of smart contracts will require the use of the new BCS token, thus ensuring a decentralization of payments and the system's independence from any third parties.

BCS tokens will provide the following guarantees:

1) Financial independence of the participants; once a smart contract is executed, a record of the transaction will appear on the ledger;

2) Services on the platform cannot be paid for using fiat money; the use of BCS currency permits to set the fees as low as possible.

7.1. Token flow

BCS tokens will circulate freely among users; those who do not have them will have to purchase them using regular cryptocurrency exchange services.

An instructor can use BCS tokens to pay for a sponsored high position in a listing; he or she will have to either buy tokens on the free market, receive them from another user, or purchase them using the platform's internal exchange service.

At the moment of creation of a teaching area, an instructor must make a deposit equal to 20% of the intended price of the services. In case of a conflict requiring arbitration, half of this deposit is to be paid to the arbitrators, and the other half is paid to the platform as the arbitration processing fee.

A student is to pay for the services of a translator, if an agreement exists to this effect with the instructor.

Tokens, including fees and arbitration deposit, are to be refunded to both parties in the following cases:

1) If the teaching session is cancelled in advance by the instructor;

2) If the students is no longer willing to receive the teaching services and notifies the instructor in advance;

3) If a system error occurs.

7.2. Financial model

A fixed number of 200 million BCS tokens are to be issued. All these tokens will be issued at the start of their sale. New tokens cannot be created, and existing ones cannot be destroyed. This will enable us to make tokens cheaper and avoid a decrease in their economic value. Since education services on the BitCourse platform can be paid for solely with BCS tokens, the demand will grow.

The price of one BCS at the moment of the ICO is set at 0.0033 ETH.

7.3. Allocation of BitCourse fees

TBCS tokens received in the form of fees will be credited to the Platform Development Wallet and distributed by the company in accordance with section 6.5 of the present White Paper.

7.4. Platform development

Initially 35% of the total number of issued BCS tokens will be reserved for the needs of platform development. The funds in the Platform Development Wallet will be utilized to improve the BitCourse platform and its application, as well as to reward users who benefit the community and the platform.

For instance, at the end of each month the user who had received most rating points throughout the month will be rewarded with a certain number of tokens. Here we should note that the reward will go not to the user who has the highest rating at the moment when this contest takes place, but rather to the one who had been awarded the most rating points by users during the preceding month. This way the rating counter that determines the winner will go back to zero each month, and all users will have equal chances to win the contest and

receive the reward. This will serve as motivation for the users to teach as many classes as possible, provide the best-quality services, avoid using arbitration as a method of conflict resolution, and maintain an active social profile on the platform.

BitCourse is also planning to distribute part of the BCS tokens between those individuals who assist with advertising the platform to the general public and benefit the platform's development. Tokens will also be used to pay any legal, economic, social, and other expenses that might arise. For this purpose, 14% of all issued tokens will be stored as a reserve, to be used only in emergencies and only if the company does not dispose of any other financial assets necessary to resolve the problem. In case of a total depletion of the reserve fund, the company will purchase tokens on the exchange market in the amount necessary to fully or partially replenish the reserve, in accordance with the conditions on the market and on the BitCourse platform. The minimal price of the BCS tokens sold by the company on the exchange market is set at 0.1$, or their price at the moment of the ICO.

Furthermore, the company is to withhold 5% of the tokens to ensure the functioning of the platform's internal exchange service, which will allow any participant to purchase tokens to pay for the education services.

To summarize, tokens withheld by the company will be distributed in the following way:

- 5% as the company's bounty;
- 5% to ensure the performance of the internal exchange service;
- 11% as a reserve for token holders;
- 14% as a reserve fund for emergencies that threaten the existence of the platform.

7.5. Rewards for token holders

In order to limit the volatility of the tokens' price, 11% of the total number of the company's tokes are to be reserved in order to award bonuses to token holders.

Users who do not sell any of their tokens on the exchange market for three months are awarded a bonus equal to 10% of the number tokens in the user's possession.

Users who do not sell any of their tokens for six months are rewarded with a bonus equal to 13% of their tokens. If no tokens are sold for 10 months, the bonus is increased to 17%.

These percentage points cannot be added up; that is, bonuses cannot be accumulated. All unused tokens will remain in reserve and used in the same manner as the reserve tokens described in section 6.4.

7.6. Bounty campaign

We will allocate up to 5% of the total number of tokens to pay rewards for the support of the ICO. Such a reward is justified, since BitCourse is a social platform that requires promotion and public support.

A bounty campaign participant needs to register on the BitCourse platform and remain a registered user at least until the completion of the ICO. This is the first obligatory requirement for the participation in the bounty campaign.

Tokens will be distributed as follows:

A signature and avatar campaign on Bitcointalk.org - up to 2 000 000 BCS
Social networks campaign - up to 4 000 000 BCS
Translation and administration services - up to 1 000 000 BCS
Articles, videos, and blogs - up to 2 000 000 BCS
Reserve - up to 1 000 000 BCS

Bonuses will be awarded and credited to the bounty campaign participants within 10 days after the start of the ICO.

После проведения баунти не распределенное(оставшиеся в фонде баунти) количество токенов будет сожжено.

8. Roadmap

BitCourse is a social platform, and most of the funds attracted during the Pre-ICO and the ICO will be spent on marketing services, salaries of the company's employees, international advertising (primarily in China, US, Japan, Russia, Canada, and the EU). Our main target are states with the most developed education systems, such as the UK. The platform will be geared at attracting professionals from around the world. A large portion of the raised investment will be used for advertising our product to potential users. According to our calculations, if we succeed in attracting the attention of 10% of our target audience, and if just 1% of the target audience actually register on the platform, they will provide information about the platform to the rest of potential users by writing reviews.

Here is a summary of how we are planning to use the funds raised during the closed Pre-ICO:

- 50% - on advertising the open Pre-ICO and the ICO itself throughout a variety of advertising spaces in China, US, Japan, Russia, Canada, and Europe;
- 20% on legal services;
- 20% on marketing analysis studies and the creating of a detailed marketing plan for the company;
- 10% on salaries for the team, creating of a demo version of the platform, attending international conferences devoted to the blockchain technology and ICO to present the platform.

Funds raised during the open Pre-ICO will be distributed and used as follows:

- 30% on advertising the ICO and the platform itself;
- 30% on hiring employees (website administrators, managers responsible for attracting instructors and students, marketing specialists, lawyers for drawing up international partnership agreements);
- 30% on buying software necessary to ensure quality performance of the platform (contracts with video streaming and hosting services, etc.);
- 10% on financing the day-to-day activities of the team, attending international conferences and events.

Funds raised during the ICO will be allocated according to the following scheme:

- 60% on advertising the platform;
- 25% on salaries for hired employees;
- 10% on signing contracts with the leading education and consulting companies in various countries;

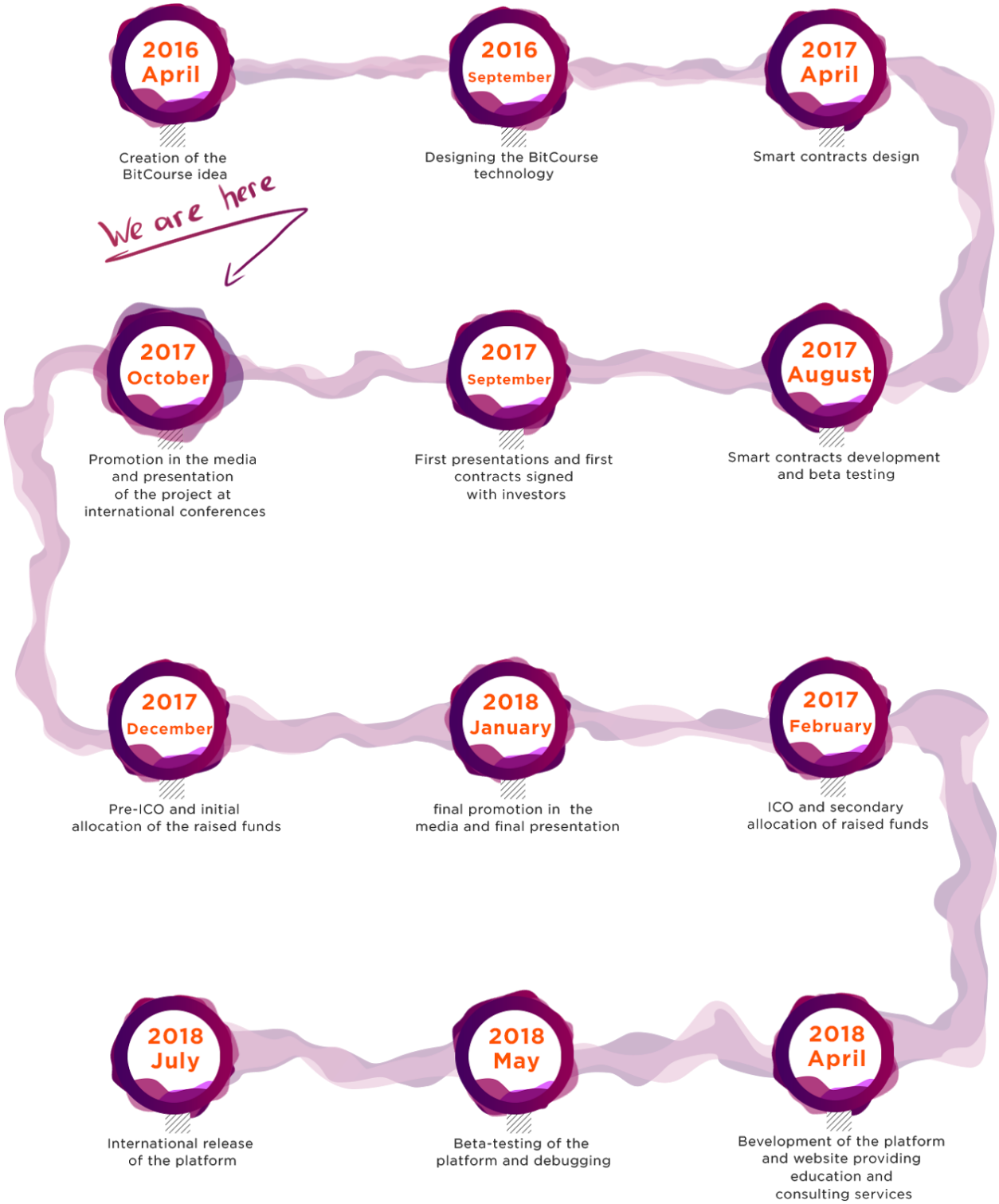
- 5% on unforeseen expenses.

The major part of all raised funds (over 60%) will be spent on advertising.

larger the sum raised, the better we will be able to finance each of the departments of the company, which cover the following areas of responsibility:

- marketing
- legal
- finance
- design
- programming
- partnerships & collaborations
- initial assessment and testing
- communications with the media and bloggers.

We expect the platform to develop according to the following scheme:


2016 April
Creation of the BitCourse idea
We are here
2016 September
Designing the BitCourse technology
2017 April
Smart contracts design
2017 August
Smart contracts development and beta testing
2017 September
First presentations and first contracts signed with investors
2017 October
Promotion in the media and presentation of the project at international conferences
2017 December
Pre-ICO and initial allocation of the raised funds
2018 January
final promotion in the media and final presentation
2017 February
ICO and secondary allocation of raised funds
2018 April
Bevelopment of the platform and website providing education and consulting services
2018 May
Beta-testing of the platform and debugging
2018 July
International release of the platform

9. Conclusion

BitCourse creators expect the platform to be able to influence the development of technology, industry, services, and other spheres of human activity. The platform will accumulate knowledge of humans across the world, as a ray of light in the darkness of ignorance. Thanks to its system of ratings, finding efficient and high-quality education services will be easy, and the consequences for the global community can be dramatic:

1. Thanks to easy access and affordable prices of education services (made possible by group learning), third-world countries will be able to develop faster; poor citizens in developed countries will benefit greatly, too.

2. A unified global platform will be created, characterized by a high level of competition among the instructors and, as a result, a high level of services provided. Students will be able to find education services they need easily thanks to the adaptive design of the website and the large number of highly-rated instructors.

3. It will become unnecessary to attend a university or move abroad to obtain a quality education. Leading public universities in developed countries will use the platform to stream their classes. This will create a highly competitive environment for universities; succeeding against this competition will allow a university to increase its student numbers manifold.

4. The three aforementioned changes will encourage an evolution of the whole society, a higher quality of life, and progress of the human race.

5. Commercial organizations will train their employees on our platform. The level of training will grow, and the cost of training for companies will decrease.

6. The cost of the tokens will increase in price, due to the fact that the commercial turnover on the platform will increase, and the tokens that the participants will be able to pay will be a limited number.