



Technical White Paper

'18

Program Staking & Token Architecture

V1.2



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Overview

Introduction

ODEM, the world's first blockchain-driven On-Demand Education Marketplace, is a software platform built on top of Ethereum's decentralized ledger technology. ODEM aims to make in-person higher education more accessible and affordable around the world by leveraging blockchain technology and Ethereum's ERC-20 based ODEM Tokens (ODEM-T). In the first quarter of 2018, ODEM conducted a public crowdsale to raise funds for platform development. ODEM sold approximately 100 million ODEM-T.

Unique Value Proposition, Revenue Generation and Technology Overview

ODEM's unique technical model of facilitating in-person education (and eventually live-streamed and online programs) includes several core-use models including:

1. Educational Program Token Staking - Learning Seat: A model that ensures and rewards commitments of students and educators from crowdsourced educational programs and experiences.
2. Digital Certification: Indelible, portable and transferable digital certificates created for use in the following ways:
 - a. Committing ODEM-T to the blockchain by locking the tokens to permanently entering the certification on the chain
 - b. Creating indelible proof of participation and completion of programs on the ODEM network for students and educators
 - c. Creating a mirrored digital record of proof of completion of certification through other traditional institutions or certification programs
3. Digital Certification - Education Activity Repository (EAR) Process: The veracity of student transactions may be difficult to confirm. Therefore, ODEM provides the EAR Process and ledger to securely store an individual's educational record.



4. Digital Certification - Identity Through Education (ITE) Process (Certification through Consensus): The ITE is used when a student is unable to verify academic transactions. ODEM will use established entities to perform verification through a consensus model.
5. Education Certification Viewing - Window Seat: This allows third parties such as employers, to purchase access to students' digital certificates. Access fees are shared with opted-in users.
6. ODEM Services Settlement Integration: ODEM will leverage blockchain-based mechanisms to use ODEM-T as a core currency. ODEM-T will provide faster, more reliable transactions for cross-border, multi-payer, multi-payee, currency-agnostic transactions on the platform.
7. Curriculum Royalty Payment Integration: Educators can use the ODEM Platform to license curriculum to other educators. Smart contracts guarantee payment of earned royalties.
8. Program Revenue Sharing: As the education supply chain becomes more efficient, ODEM will continue to honor commission obligations with channel partners and speaking and literary agents. ODEM will use smart contracts to ensure that revenue-generating opportunities are not lost in the transition to a blockchain-based model.
9. ODEM Token Self-Locking Opportunities: The self-locking program is used to reward early ODEM Platform adopters. The program runs until the network is fully operational. Locked tokens cannot be used for anything else. Reward tokens will be paid quarterly.
10. Staking Providers: Third parties can stake on behalf of students and educators. Third-party involvement allows participants to shed risk associated with ODEM-T price fluctuations.
11. Sponsorships: Education sponsors promote access to safe and secure learning for physically or financially disadvantaged students. Sponsorships may also generate platform revenue.

Proprietary and Open Source Platform Distinction

The ODEM Platform will consist of two development environments. One is on-chain and open for public re-use. The other is off-chain, as a proprietary interface for blockchain-based protocols, contracts and interactions with ODEM-T.



Excelorators Partnership and Beta Adoption

The ODEM team was inspired by the success of its partner, Excelorators Inc. For more than five years, Excelorators has provided high-quality educational services to overseas students, managers and executives on the campuses of top U.S. learning institutions. Excelorators' clients will test the ODEM Platform in preparation for mass adoption. ODEM will stake on behalf of Excelorators' students and educators during initial testing.

Excelorators brings to ODEM's development process:

- Years of experience in selling, fulfilling and delivering educational programs and events
- A wealth of contacts in travel and education in the U.S. and abroad
- An understanding of what it takes to create and deliver a successful education experience for those traveling from abroad
- A strong understanding of the structure of an inclusive education ecosystem in which products are developed and sold
- The ability to quickly resolve cross-border payment issues

Through the achievement of operational efficiencies in the ODEM platform, Excelorators expects to reduce the cost of its educational programs.

Launch Timetable

ODEM Cloud screenshots of the Pre-Beta	05/15/18
ODEM DApp reveals the full vision of the network, rules, assets and possible transactions	05/15/18
ODEM Cloud Pre-Beta users event and feedback	06/01/18
ODEM DApp-Cloud first integration	06/01/18
Activation of ODEM Beta 1.0	06/25/18



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OVERVIEW

Student Portal (SP)	06/25/18
Admin Portal (AP)	06/25/18
ODEM Token Self-locking Beta 1.0	07/01/18
ODEM Cloud Beta 1.1	07/30/18
Educator Portal (EP)	07/30/18
Education Activity Repository (EAR)	07/30/18
Activation of ODEM on the main network	08/01/18
ODEM Cloud Beta 1.2	09/03/18
Partnership Portal (PP)	09/03/18
ODEM Cloud Beta 1.3	09/10/18
Identity Through Verification (ITE) Beta 1.0	09/15/18
ODEM Cloud V2 Alpha screenshots released	09/15/18
ODEM Alpha V2 migration of Beta V1 users	10/01/18
ODEM V2 Beta soft launch	01/10/19
ODEM V2 hard launch	02/10/19
Education Activity Repository (EAR)	03/01/19
Identity Through Verification (ITE) Beta 1.0	04/01/19
Sponsorship Beta 1.0	07/01/19
Third Party Staking Model Beta	01/01/20
Window Seat Beta 1.0	02/01/20
Curriculum Licensing Royalty Beta 1.0	04/01/20



ODEM Development Environment

ODEM Decentralized App (DApp): Open Source

The DApp forms the backend to the ODEM Platform. The DApp's smart contract links students, educators, and service providers considering educational offerings.

ODEM is creating a set of smart contracts, protocols, and standards to interact with ODEM-T on the Ethereum platform. These self-executing contracts incorporate unique terms and criteria such as a program's price, duration and location. The contracts manage payments to educators and the issuance of students' certificates. The DApp stores data about participants to assist on decisions about their future engagement in academic programs on the platform.

Once published, the DApp's code will be available to the community for re-use and augmented development to create new opportunities for the ODEM-T.

Opportunities for Extending Use of the ODEM DApp include:

- Building apps off of the DApp (such as facilities)
- Storing data for educational software companies
- Marketing metadata to users through software companies
- Charging users for more prominent search placements
- The resale of educational programs
- Safekeeping of videos on tutoring and mentoring
- Managing fee discounts based on user's time of adoption, reputation, and activity on the ODEM Platform



ODEM Cloud: Proprietary User and Ethereum Blockchain Interface

The ODEM Cloud is the proprietary interface and the first application running on the ODEM network.

Services provided via the ODEM Cloud include:

- Staking tokens for educational offerings
- Viewing other user's educational data
- Viewing aggregated educational data
- Sponsorships
- Token self-locking for rewards
- Education Activity Repository (EAR)
- Identity through Education (ITE)

Unlike the DApp, the Cloud resides in a central location. An app's frontend is usually built with HTML technologies connected to the Ethereum blockchain using a web3 JavaScript library. The frontend can be stored anywhere (such as a local computer).

Within the ODEM Cloud, users will see:

- Their profile
- Available programs
- Registered programs
- Class roster of programs
- Programs taken
- Program events
- Certificates obtained



- Token balances
- Calendars
- The message center

Users will be able to:

- Request a program from an existing library
- Request a new program
- Enroll in an available existing program
- Message others inside the portal who are participating in the program
- Edit profile
- List a program
- List an event
- List availability
- Participate as a student
- Upload student transcripts

ODEM-Tokens (ERC-20)

The ERC-20 ODEM-T sold in the crowdsale will provide access to the ODEM Platform through the staking process. The ODEM-T's economic model is based on the Sweetbridge Foundation's discount-token research. The design isolates the utility of the token on the platform from external market forces, ensuring that use of the tokens is always advantageous.

The ODEM staking architecture is based on adoption of the Ethereum ERC-900 interface. A student stakes a desired program by pledging a small amount of ODEM-T. Educators stake programs they intend to teach. Staking assists the platform in assessing levels of student-and-educator interest. If a participant backs out, their staked tokens are forfeited.

Using ODEM-T as the core currency eliminates issues associated with fiat, including high fees



and lengthy processing times.

ODEM-Credits

ODEM will use the ERC-780 protocol for creation of ODEM-Credits (ODEM-C). Adaptation of the protocol will account for a more general payload and limit the transfer method. ODEM-C act as digital certificates given to users who successfully complete educational offerings. The number of ODEM-C will increase as more users complete programs.

The ODEM-C includes the name of the student and educator, the program and date and a reference to the program. ODEM-C will be stored on the blockchain, indicating that a student has taken a program. The ODEM-C payload will have an identification to off-chain history or information such as the program and educator's name and the student's grade so that the platform will not have to be accessed. A link in the certificate allows data to be viewed for ODEM-T.

The certificate hash or the information on the Ethereum blockchain can be stored to connect the data on the InterPlanetary File System (IPFS).

Private Keys

Platform users do not have to be responsible for their private keys (as they can lose them). Plugins such as MetaMask and uPort offer recovery mechanisms. MetaMask is the easiest available integration point for a decentralized application (DApp) with an Ethereum address. uPort provides a self-sovereign identity framework including biometrics which improves the user experience by prompting for a thumbprint to confirm transactions.

Addresses can be assigned to have recovery mechanisms inside of smart contracts. Centralized recovery of credits will come from so-called super users who can move credits for accounts with lost public keys.



Necessity of the Tokens

The ODEM-T, in addition to being used for staking, drives the ODEM-C smart contract. Controlling staking requirements is used to tune the system. Maintaining a properly tuned staking requirement is difficult if secondary market forces dictate the staked tokens' utility. By using ODEM-T, the effect of external market fluctuations will be reduced.

Velocity Problem

With instantaneous payment, there is a problem with velocity where a token that is spent does not have any real consistent forces on the price. By locking and staking the token, a function for the token of just passing through is created. Further information on the problem: <https://www.coindesk.com/blockchain-token-velocity-problem/>.

Technology Architecture

1. Educational Program Token Staking - Learning Seat

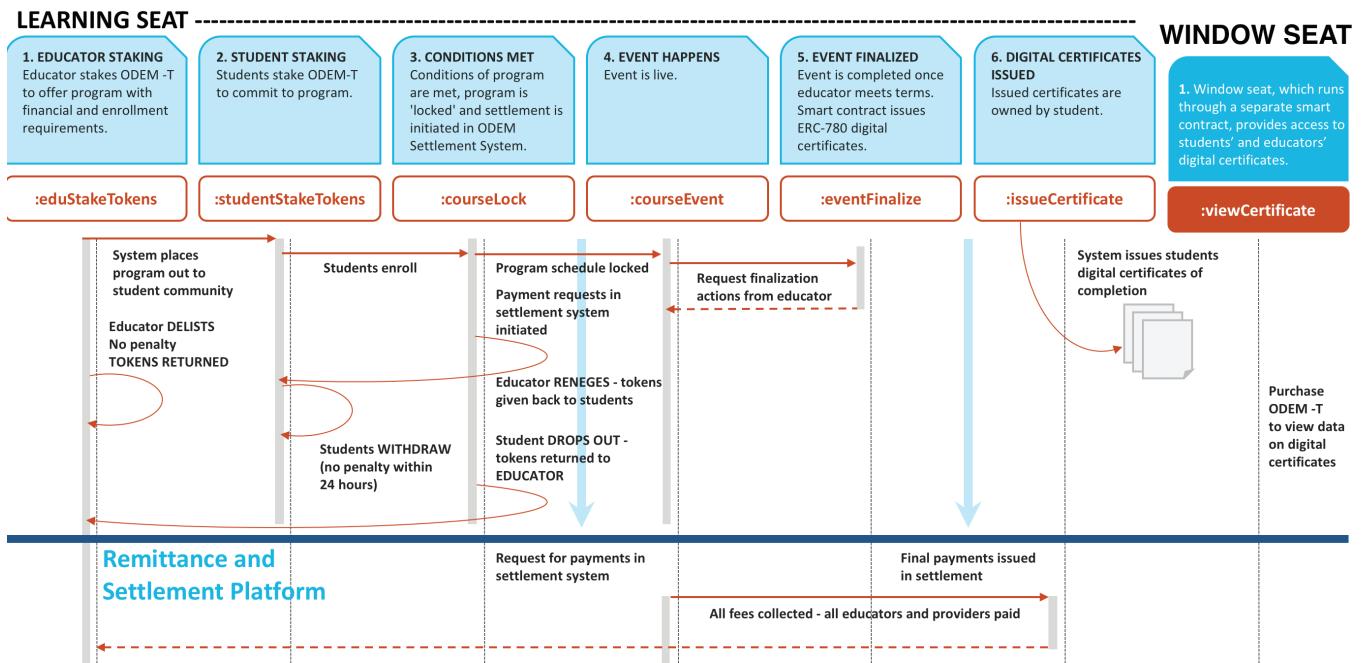
Students and educators will use the ERC-20-based ODEM-T to commit to academic program offerings by staking. Participants commit funds (in this case ODEM-T) to lock in their financial commitment. ODEM's staking model follows pre-defined conditions that grant reward tokens for following through. It docks fees when commitments are not upheld. When a program is scheduled and participants have met all conditions, the staked tokens will be unlocked.

The process is applicable to individual offerings and longer-term programs. They do not require another smart contract. Programs can be set up by configuring program offerings as defined by a set of prerequisites.

Users will be able to see other user's educational history and credibility scores based on information stored in the platform, DApp, and blockchain.



ODEM stakes (Learning Seat) = Percent of stake (based on Oracle / whitelist contract) x number of seats created x cost to register for a seat.



1. An educator stakes ODEM-T to commit to teach an academic program pending the receipt of a sufficient number of students
2. A student stakes ODEM-T to request an offering or register for a program
3. An educator can commit to teach an offering that a student requested
4. When all the conditions are met, a program is 'locked'
5. A locked program triggers payment collection in ODEM's settlement system
6. The educator finishes the program and issues digital certificates to students
7. Staked tokens are unlocked and ODEM pays educators and service providers

ODEM Program Selection Generator

The ODEM Program Selection Generator uses data stored within the platform, DApp,



blockchain and IPFS to make recommendations about educational offerings. A student, for example, would request a preferred program, date, price, educator, location, lodging and travel options. The generator finds the closest matches to trigger program creation. It also creates a smart contract for fulfillment, delivery and payment.

The optimization and machine learning algorithms used to identify groups of stakeholders who collectively meet requirements for an educational program may be secured through validation games under the TrueBit Protocol (<https://truebit.io>). Validation games ensure the integrity of computations in the selection generator.

Renege Policy

Penalties will apply for reneging on program commitments. ODEM reserves the right to levy fines after observing user behavior. ODEM aims to incentivize responsible behavior and avoid penalizing excessively. Some cases, such as a death in the family, may be unavoidable.

Surveys

ODEM users who participate in an educational offering will receive a questionnaire. Users will be asked to rate other ODEM participants who attended the program. Survey responses will influence the user's educational rating on the platform, DApp, and blockchain. Survey participants may also be rewarded with ODEM-T.

2. Digital Certification

ODEM will also create non-fungible, non-transferable digital certificates to be issued on the Ethereum blockchain upon completion of an ODEM program or as a secondary documentation of other certifications.

Certifications will be indelible, portable and transferable. They will be used for:

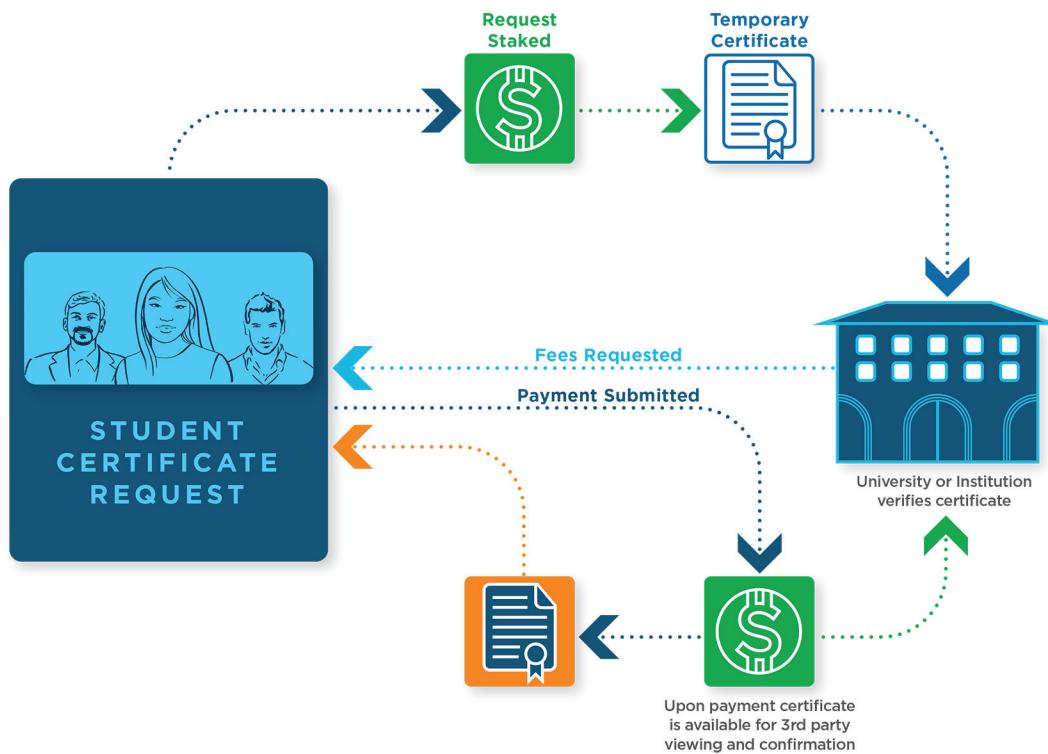
1. Committing ODEM-T to the blockchain, through locking ODEM-T, to permanently enter the certification on the chain



2. Creating indelible proof of completion of programs on the ODEM platform network for both students and educators
3. Creating a mirrored digital record of proof of completion of degrees and certifications through other traditional institutions or certification programs

3. Education Activity Repository (EAR) Process

Student transactions can be difficult to confirm. As a result, ODEM provides an Education Activity Repository (EAR), a ledger that keeps track of educational activities.



Students

Students post their educational transactions. They will stake ODEM-T which will be returned if the educational transactions prove to be valid.



- ODEM will request verification from students' institutions
- Once confirmed, the students will be notified
- Students can pay a fee to post certificates on the blockchain

Private Institutions

- Private Institutions can post educational transactions
- Private Institutions can pay a fee to post certificates on the blockchain

Public Institutions

- Public Institutions can post educational transactions
- Students can pay a fee (shared with the institution) to post certificates on the blockchain

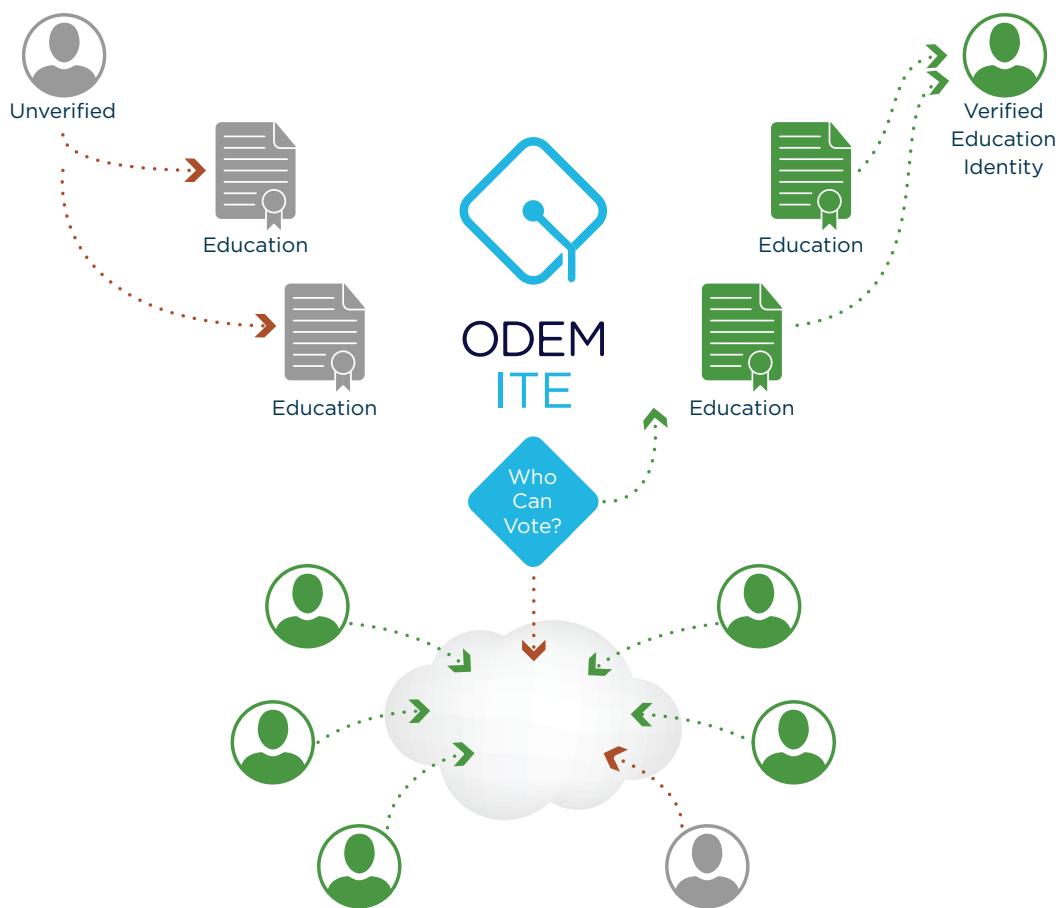
4. Identity Through Education (ITE) Process

Identity Through Education (ITE) is used when a student does not have anyone to verify educational transactions. ODEM uses established entities for verification.

- Students can post educational transactions
 - Students will stake ODEM-T, which will be returned if the educational transactions are proved valid
 - ODEM will request consensus from established institutions
 - Once confirmed, the students will be notified
 - Students can pay a fee to post certificates on the blockchain
- Consensus
 - ODEM allows established entities to vote on student self-reported educational transactions
 - To vote, the established entity will stake ODEM-T
 - If a consensus of five or more established entities agree:
 - The records are confirmed
 - The established entities get their stake back



- Each entity receives a reward as part of the original student stake
- If no consensus is reached:
 - Established entities get the stake back
 - The records are rejected

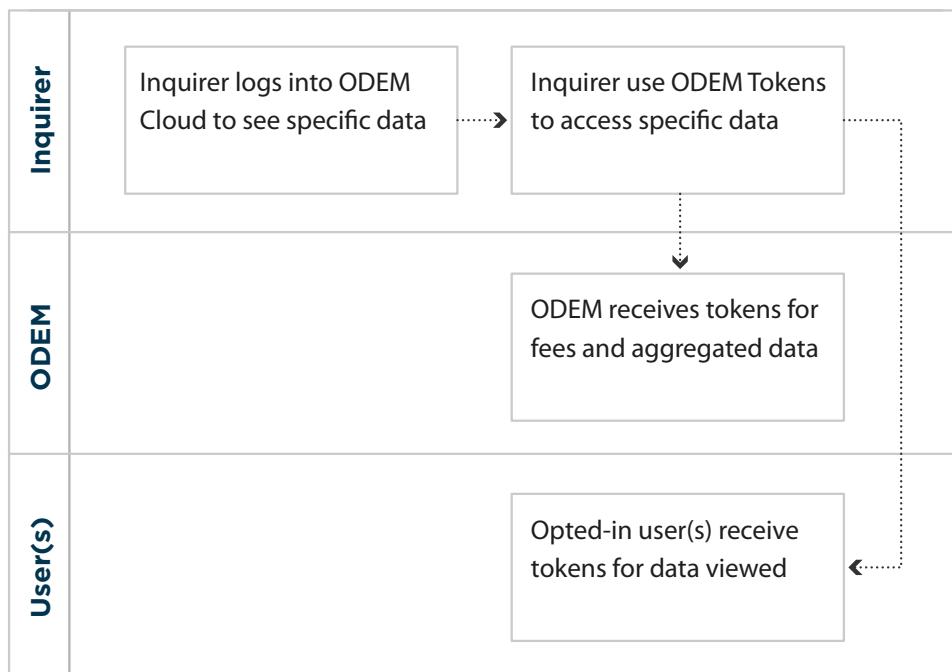


5. Window Seat - Viewing Certificates

A window seat allows employers, universities, students, educators, service providers, and third-party stakers to access secure data. The information includes digital certificates, program activities and completion rates, educator participation from opted-in users and aggregated information within ODEM. Window seat access is paid for with ODEM-T. The ODEM-T used to access the window seat and aggregated data goes to ODEM. Opted-in users



whose data was viewed also receive ODEM-T.



6. ODEM Cross-border Settlement Services

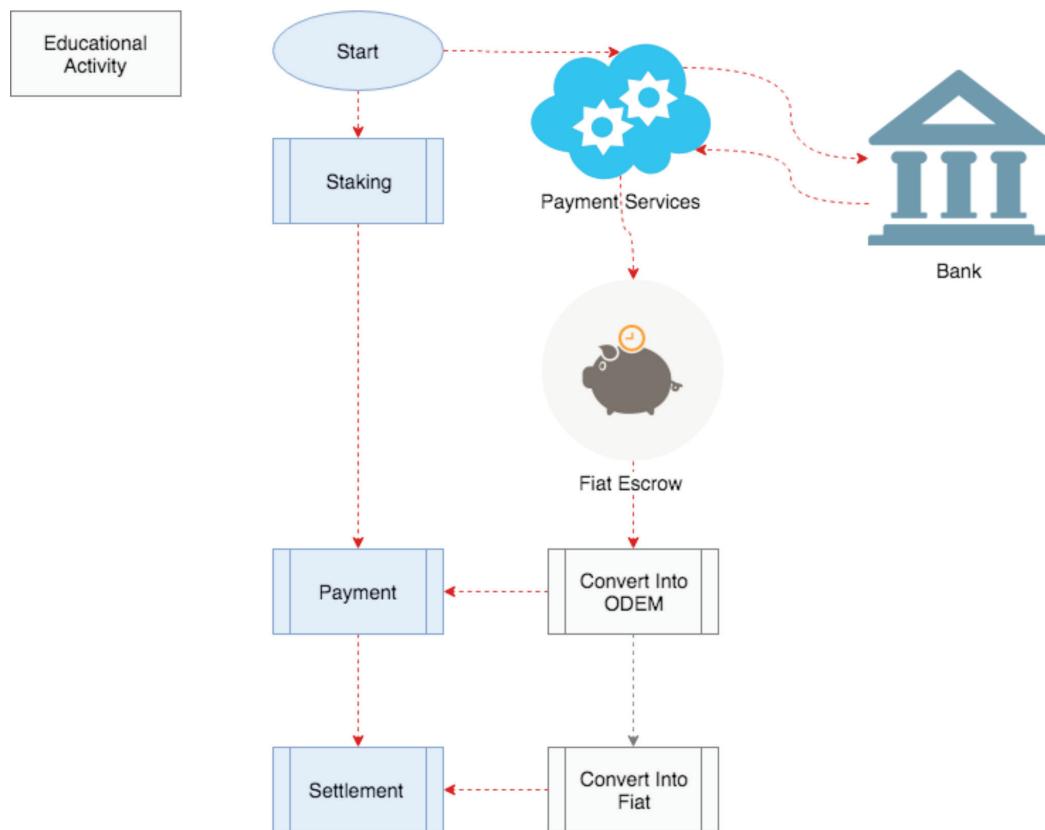
ODEM will leverage blockchain-based transaction mechanisms and use ODEM-T as its core currency. Use of the tokens will allow for faster, more reliable multi-payer, multi-payee, currency-agnostic transactions for educational offerings.

Examples of purchases included in the settlement services are, but not limited to:

- Deposits and payments from clients and third-party student representatives
- Program payments to educators
- Payments to facilities
- Payment for required program materials including books



- Payment for service providers (translators, caterers, etc.)



7. Curriculum Royalty Payment Integration

Educators on the ODEM Platform can license curriculum to other educators and earn royalties through a smart contract.



8. Revenue Sharing Contracts

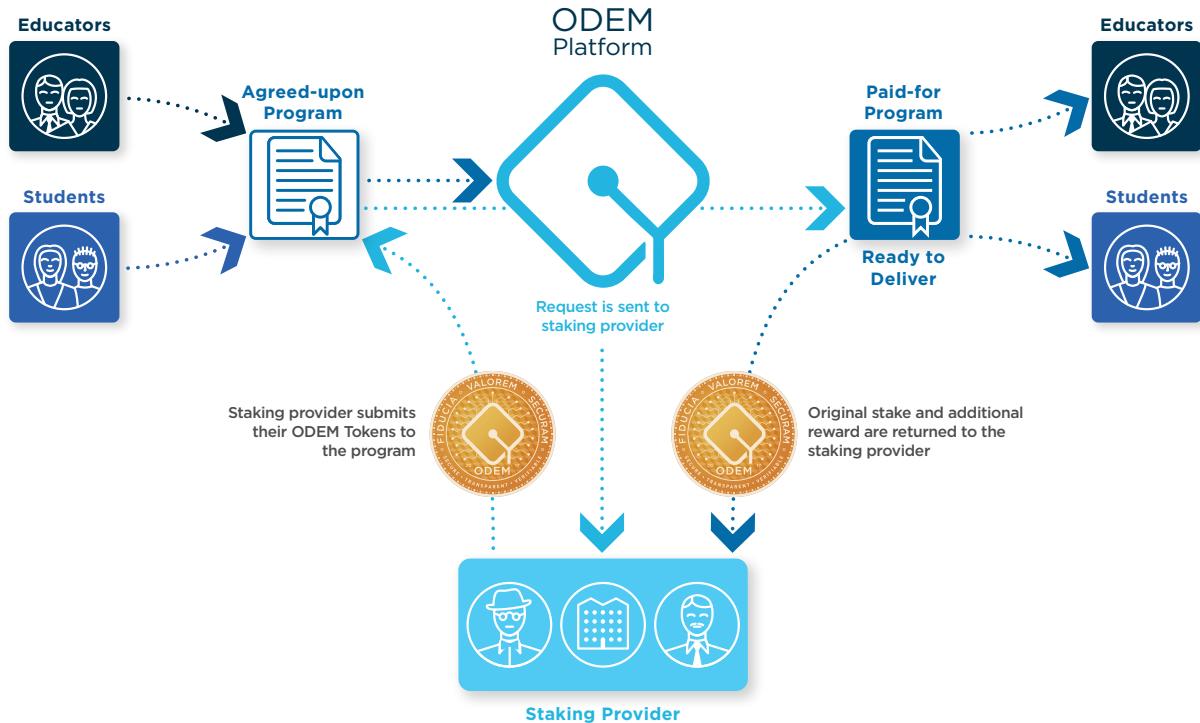
As ODEM improves efficiency in the education supply chain, it will continue to embrace existing business relationships, including those with industry partners and speaking and literary agents. ODEM will use smart contracts to ensure that revenue-generating opportunities are not lost in transition.

9. ODEM Token Self-Locking

The self-locking program is used to reward ODEM early adopters. It will be in operation as long as one year or until the ODEM network is fully functioning. Users can register and enter their digital currency wallet address for the amount of ODEM-T to be locked. Reward tokens will be paid quarterly.

10. Staking Providers

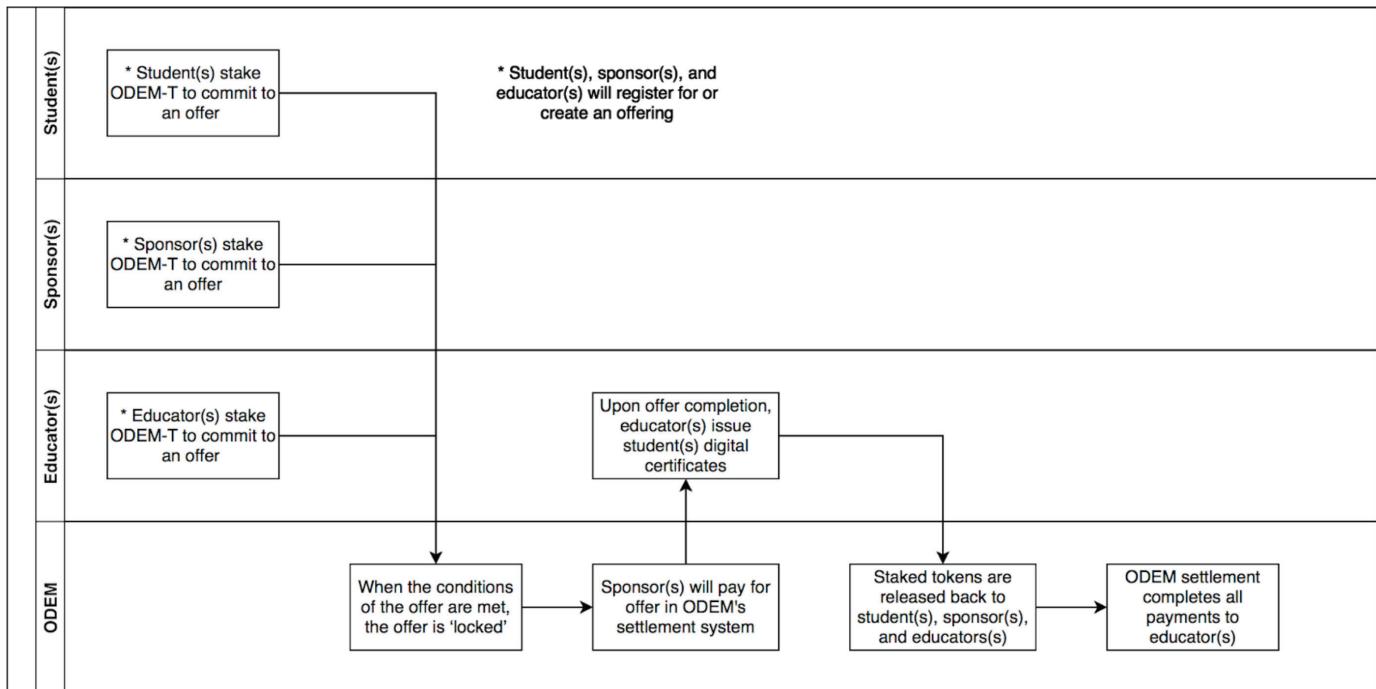
Staking providers will manually stake tokens for users and/or provide tokens to ODEM to commit to program offerings on behalf of qualified users. A staking provider's tokens will be returned at the completion of an educational activity. The provider also stands to be rewarded with a 50 percent share (from ODEM's fees) for enabling the ODEM system.



11. Sponsorships

Education sponsors promote equal access to learning in a safe and secure location for financially or physically disadvantaged users. Sponsoring these individuals will ultimately result in greater earnings and tax revenue.

Most individuals who are sponsored are driven to succeed by someone who believes in them by providing needed resources. A U.S. Department of Education study shows students who are the first in their families to graduate from college can end the cycle of poverty in their generation. Sponsorship include paying for another student's program, curriculum, or program expenses. Sponsors can specify the types of students they want to support. Some selection criteria may include geography, family income, age, gender and scholastic record.





Appendix A: Student Portal Screenshots

Login



The screenshot shows a student walking down a hallway. On the right side of the screen, there is a large graphic with the text "Unlocking Human POTENTIAL". Below the graphic, there is a dark banner with the ODEM logo and the text "The First Decentralized Education Marketplace". A small note below the banner states: "The ODEM model will create an integrated platform where all types of students and student representatives can create and request services for education programs."



Login to your account

Forgot your password?

No worries, click [here](#) to reset your password.

[Sign In](#)

Not a member yet? Click [here](#) to register.

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Register

A photograph of a student walking down a modern hallway with wooden walls and doors. Overlaid on the right side is a dark rectangular area containing the text "Unlocking Human POTENTIAL".

The First Decentralized Education Marketplace

The ODEM model will create an integrated platform where all types of students and student representatives can create and request services for education programs.



ODEM

Create a new account

First Name	Last Name
Username	
Email	
Password	
Re-enter Password	
<input checked="" type="checkbox"/> Student	<input type="checkbox"/> Educator
<input type="checkbox"/> Provider	

Register

Already a member? Click [here](#) to login.

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Reset Password

A photograph of a person walking down a modern hallway with wood paneling and doors. Overlaid on the right side of the image is the text "Unlocking Human POTENTIAL" in white, with "POTENTIAL" being significantly larger and bolder.

The First Decentralized Education Marketplace

The ODEM model will create an integrated platform where all types of students and student representatives can create and request services for education programs.



ODEM

Forgot Password

Enter Your Email / UserName

OR

Enter Your Phone

Remember your password?

It's OK, click [here](#) to login to your account.

Reset Password

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My Profile

The screenshot shows the 'My Profile' section of the ODEM platform. On the left is a vertical sidebar with icons for 'My Profile' (selected), 'My Certificates', 'My Programs', 'Upcoming Programs', 'My Calendar', and 'Message Center'. The main area has a header 'My Profile' and a sub-header 'Bostrum, Jan / Student'. It contains fields for Legal Name (Jan Middle Bostrum), Username (jbst524), Nationality (All), Educational level (All), Mobile Number, Email (jan@odem.io), Alternate Phone Number, Second Email, Wallet Address, Birthdate, and Mailing Address. A 'Save' button is at the bottom right.

Legal Name	Jan	Middle	Bostrum
Username	jbst524		
Nationality	All		
Educational	All		
Mobile Number		Email	jan@odem.io
Alternate Phone Number		Second Email	
Wallet Address			
Birthdate			
Mailing Address			



Change Password

The screenshot shows the ODEM dashboard with a 'Change Password' modal open. The modal has three input fields: 'Current Password', 'New Password', and 'Confirm Password'. Below the modal are two bar charts: 'Sold Over Time' and 'Revenue Benchmark'. The 'Sold Over Time' chart shows monthly sales values from January to December. The 'Revenue Benchmark' chart compares 2016 and 2017 revenue.

Sold Over Time

Month	Values
January	~100
February	~150
March	~250
April	~300
May	~200
June	~100
July	~350
August	~400
September	~150
October	~50
November	~500
December	~50

Revenue Benchmark

Year	Values
2016	52.0 \$
2017	150.0 \$



APPENDIX A

My Certificates

	Name	Title	Program Length	Completion Date	University	Country	City	Signatory	
	Communication	Title 1	12 days	01-01-2010	Harvard University	American Samoa	Cambridge	Michael Tworek	
	Program 2	Title 2	15 days	05-02-2012	Harvard University	American Samoa	Cambridge	John	
	Program 3	Title 3	20 days	04-15-2013	Abertay University	Albania	Scotland	Kelly	
	Program 4	Title 4	30 days	02-24-2015	Bangor University	Åland Islands	Bangor	Malhotra	

Displaying 1 - 4, of 4 Rows

10 25 50 100



My Programs

The screenshot shows the 'My Programs' section of the ODEM platform. On the left is a vertical sidebar with icons for 'My Profile', 'My Certificates', 'My Programs' (which is selected and highlighted in teal), 'Upcoming Programs', 'My Calendar', and 'Message Center'. The main content area has a header 'My Programs' and a sub-header 'Registered Programs'. Below this is a table listing four registered programs:

Name	Start Date	End Date	Country	City	Action
Administrative Regulation	06-20-2018	06-24-2018	China	Municipality	Show Events
Business Management	05-10-2018	05-12-2018	Egypt	Alexandria	Show Events
Financial Management	05-16-2018	05-20-2018	USA	NewYork	Show Events
Human Resource Development	06-01-2018	06-03-2018	Italy	Rome	Show Events

At the bottom of the table, it says 'Displaying 1 - 4, of 4 Rows' and has a page size selector (10, 25, 50, 100). Below the table is a section for 'Completed Programs'.



Events for Programs

The screenshot shows the ODEM platform interface. On the left is a vertical sidebar with icons for My Profile, My Certificates, My Programs, Upcoming Programs, My Calendar, and Message Center. The main area displays 'My Programs' and 'Completed Programs'. A modal window titled 'Events For Administrative Regulation' is open, showing a table of four events:

Name	Event Type	Date	Start Time	End Time
Administrative Regulation Event 1	Course	2018-06-20	12:30	15:30
Administrative Regulation Event 2	Movie	2018-06-21	16	18:30
Administrative Regulation Event 3	Lunch	2018-06-22	12:30	14:30
Administrative Regulation Event 4	Movie	2018-06-23	12:30	5:30

Below the table, it says 'Displaying 1 - 4, of 4 Rows' and has buttons for 10, 25, 50, and 100 items. To the right of the modal, there are dropdowns for 'Bostrum, Jan / Student' and 'City', with options like Alexandria, NewYork, and Rome, each with a 'Show Events' button. There are also pagination controls for the main content area.



Upcoming Programs

The screenshot shows the ODEM platform interface. On the left is a vertical sidebar with icons and labels: My Profile, My Certificates, My Programs, Upcoming Programs (which is selected and highlighted in blue), My Calendar, and Message Center. The main content area has a header "Upcoming Programs". Below it is a table with four rows of data. The table columns are Name, Start Date, End Date, Country, City, and a "Show Events" button. The data is as follows:

Name	Start Date	End Date	Country	City	
Algorithms	05-10-2018	05-12-2018	Egypt	Alexandria	Show Events
Artificial Intelligence	06-20-2018	06-24-2018	China	Municipality	Show Events
Data Analysis	05-16-2018	05-20-2018	USA	NewYork	Show Events
Data Structure	06-01-2018	06-03-2018	Italy	Rome	Show Events

At the bottom of the table, it says "Displaying 1 - 4, of 4 Rows". To the right of the table are buttons for page size: 10, 25, 50, and 100. The number "1" is highlighted in a blue box.



My Calendar

Bostrum, Jan / Student

Mon	Tue	Wed	Thu	Fri	Sat	Sun
30	1 Project Management Rich Newman	2	3	4 Marketing Vincent Karpenko	5	6
7 Strategic Management Alexander Hayes	8 Project Management Rich Newman	9 Economics Chuck Barrette	10	11 Marketing Vincent Karpenko	12	13
14 Strategic Management Alexander Hayes	15 Project Management Rich Newman	16 Economics Chuck Barrette	17	18 Marketing Vincent Karpenko	19	20
21 Strategic Management Alexander Hayes	22 Project Management Rich Newman	23 Economics Chuck Barrette	24	25 Marketing Vincent Karpenko	26	27



Message Center

A screenshot of the ODEM platform's Message Center. The left sidebar has a dark grey background with white icons and text. It includes links for My Profile, My Certificates, My Programs, Upcoming Programs, My Calendar, and Message Center, with the last one being teal. The main content area has a light grey background and displays the text "No messages". At the top right, there is a user profile section with the name "Bostrum, Jan / Student" and a dropdown arrow. The top center has the title "Message Center".

ODEM

≡

Bostrum, Jan / Student ▾

My Profile

My Certificates

My Programs

Upcoming Programs

My Calendar

Message Center

Message Center

No messages



Appendix B: Educator Portal Screenshots

Educator Platform - Create Program Description

The screenshot displays the 'New Program' creation interface on the Educator Platform. The main form includes fields for 'Your Information' (disabled), 'Program Description' (active), 'Schedule', 'Participants', and 'Cost'. The 'Program Description' section contains fields for 'What are You Teaching?' (with placeholder 'Your Program's Name'), 'Program Location' (set to 'Los Angeles California, USA'), 'Category' (selected 'Marketing'), 'Educational Institution' (placeholder 'Choose your school or enter a new one'), and a rich-text editor for the 'Program Description' (placeholder 'Write your message here...'). A sidebar on the right provides a 'Program Summary' with sections for 'Your Information' (Name: Jamie Brinkman, Educator Level: Tenured Professor, Associated School: University of Southern California, Location: Los Angeles California, USA), 'Program Description', 'Schedule', 'Participants', and 'Cost'.



Educator Platform - Create Program Schedule

ODEM EDUCATOR PLATFORM

PROGRAMS ACCOUNT RATINGS ★★★★☆ INSIGHTS

New Program

Your Information	Program Description	Schedule	Participants	Cost
Program Length * From 03/15/2019 To 03/27/2019	Daily Schedule * Blurb about creating a daily schedule goes here. Let them know they can also add summary details to each day.	Weekdays 9:30 AM to 4:15 PM Saturday 10:30 AM to 12:30 PM Start to Finish Add Days Apply		
Program Availability Availability is a period of time during a year when you can deliver a program. Example: a 2 week program is available from early February to late April. <input checked="" type="checkbox"/> Define Availability				
Available From 03/15/2019 To 05/15/2019				
Program Length: 12 days Program Length was converted from specific dates to a period of time to allow for greater flexibility and opportunity.				

Program Summary

Your Information

Name: Jamie Brinkman
Educator Level: Tenured Professor
Associated School: University of Southern California
Location: Los Angeles California, USA

Program Description

Program Name: Economics for SMBs
Category: Economics
Sub Category: NA
Description: In Economics for SMBs, you will learn to identify, intelligently analyze, and modify ... [more](#)
Program Location: Los Angeles, CA, USA
Educational Institution: University of Southern California

Schedule

Participants

Cost

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CANCEL



Appendix C: EXO ODEM Adoption & Beta Testing

Benefits of ODEM Platform vs Legacy Model

Standard Model	ODEM Platform	Benefits
Client creates request directly via phone or email. Must cycle through many layers and negotiations	Easily request programs through the ODEM portal	Request captured accurately and instantly put out to bid, triggering the fulfillment process. Customer is matched with the program with the dates desired at lower overhead
Extensive back and forth with client, partners and sales	Facilitation of offers between customer and ODEM providers	ODEM providers accept project based on mutually agreed-upon price with client. Middlemen costs are eliminated
Difficult to secure speakers and facilities before client will make a commitment and leave deposit	ODEM client request can only be completed once all resources are committed	Using smart contracts, payments are exchanged at specified dates based on deliverables in terms and conditions of the contract
Creation of online schedule done via manual input	Schedule is built automatically as part of schedule request	Removes uncertainty and last minute requests to program schedule and fulfillment, as event schedule is created online directly from terms and conditions through the smart contract



Unpredictable payments causing subsequent delays in payouts to vendors, resources and educators	Payments managed through ODEM smart contracts	All payments are processed within ODEM to be paid out specifically when product terms and conditions are met, preventing delays in payouts and building trust among all parties
Program curriculum is created ad hoc by a combined effort from the sales staff and program coordinators with little input from educators	Program and curriculum creation and ownership with lifetime royalty on programs used in the future	Educators from high-impact universities and businesses have already been engaged to design and create their own programs and curriculum. This drastically increases the quality of the programs and incentivizes clients to utilize programs developed by experts
Service providers are contracted on a per-case basis, feedback is not collected and quality is not measured	Vetting, securing and rating of all service providers in the system	Service providers will be vetted by the community through a rating system, allowing customers to select from those who have had prior work (like the rating system used by Upwork)



Glossary

Decentralized Ledger - Also known as a blockchain. A system for recording transactions on many computers that share control of the data.

Decentralized app (DApp) - An application in which the backend code runs within the Ethereum blockchain. DApps must be completely open-source (without restrictions of copyright or patent) and use a cryptographic token (such as ODEM) for access.

ERC-20 - Defines a common list of rules for all Ethereum tokens to follow, including how tokens are transferred and how users can obtain data about a token.

Ethereum - An open-source, public, blockchain-based distributed computing platform and operating system that was specifically designed to allow smart contract functionality.

Ethereum blockchain - A digitized, decentralized, public ledger of all Ethereum transactions.

Hash - A function that converts an input of letters and numbers into an encrypted output of a fixed length. A hash is created using an algorithm and is essential to Ethereum.

InterPlanetary File System (IPFS) - A distributed file system that seeks to connect all computing devices with the same system of files (similar to a peer-to-peer file sharing service like BitTorrent).

Non-fungible - Not interchangeable when referring to goods or commodities.

Offchain - A transaction outside of the blockchain.

Onchain - A transaction within the blockchain.

Oracle - Trusted data feeds of real-world occurrences used to activate smart contracts.



Payload - Information about the program such as a participant's ID and grade.

Private key - An encrypted password that allows a user to access a digital currency wallet. A private key should never be shared with anyone whom you do not want to access your wallet.

Public key - An encrypted password used for transactions between users as well as to identify a digital wallet publicly.

Smart contract - Self-executing agreement within the Ethereum blockchain where the contract terms are directly written into lines of code.

Staking - Using ODEM-T to access ODEM Platform and services. The stake will be returned to the user (minus any fees) as long as they do not renege on the program offering.

Transfer method - The ODEM-C digital certificate cannot be transferred to anyone else.

Whitelist - A roster of registered and approved participants.