



Decentralised lending platform for  
education loans and scholarships

# Index

1. Executive summary
2. Background
3. The Need for Sernez
4. The Sernez platform
  - 4.1. Sernez P2P Education Loans
    - 4.1.1. Loan Process
    - 4.1.2. Loan without collateral
  - 4.2. Cross Border Lending
  - 4.3. Recurring Investment
  - 4.4. Sernez as a Talent portal
    - 4.4.1. Hiring/Freelance Opportunity
  - 4.5. Sernez Foundation and Scholarship Fund
5. Technology
  - 5.1. Blockchain : An Overview
  - 5.2. Architecture
  - 5.3. Aurora by Sernez
  - 5.4. Proof of Importance (POI)
  - 5.5. Off Chain - On Chain Design
  - 5.6. Scalability
6. Sernez Tokens
7. Regulations
8. Disclaimer

# 1. Executive Summary

The value of a college degree in this highly competitive job market is widely recognized across the world. However, a little too often, scholarships and savings fall short of the actual amount of tuition fee required by a student. Students who want to pursue their dream course and land their ideal job then turn to banks for help. While the increasing urge to earn a valuable college degree is a positive sign, the mounting figures of student loan debt are not. The average American college student has about \$37,000 in student loan debt. British college students graduate with a deficit of \$55,000. Similar situations prevail in Sweden, Norway, Canada, and Australia.

In this era of globalization, where finance and talent acquisition are still not globalized, Sernez transcends geographical borders to democratize both finance and opportunities for students all over the world equally. Sernez was envisioned as a decentralized peer to peer lending platform to help students achieve greater financial wellness. We are also laying the foundation for a global scholarship program through the Sernez Foundation, which will be operated jointly by a Council and the Sernez community all over the globe.

Sernez operates on the NEM Blockchain. Our protocol, Aurora, controls all the activities in Sernez and communicates with the NEM Blockchain network. Aurora acts as a business logic layer, managing data, smart contracts and communication with the NEM Blockchain.

At Sernez, we believe that the responsibility of the lending platform to a student doesn't end with just meeting their financial requirement. Instead, the future of student loan is one that provides a complete support system for the student to develop into an industry ready professional, while being able to repay the loan comfortably.

To fuel the above, we are launching our cryptocurrency, called RNZ tokens, that are pure utility tokens released as a mosaic in the NEM blockchain. In the NEM terminology, Mosaics give rise to the creation of assets. Some call it a colored coin while others call it a token. The total supply will be limited to 4 Billion RNZ tokens out of which 25 percentage is allocated to the Sernez foundation for the global scholarship fund.

## 2. Background

Historically, banks have played a connecting role between lenders and borrowers. Investors lent money to the bank, and the bank gave out loans at a higher rate. Investors and borrowers did not interact directly because investors did not have enough competencies. However, banks have failed students on a severe scale while providing education loans. The major problems with student loans offered by banks have been outlined below:

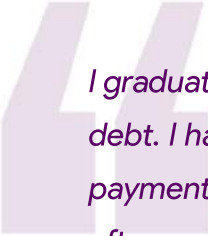
1. More than aiding a student, the stake of financial institutions lies in **increasing the profitability** of their business. They stand out as a prudent product for the banks to **sell and achieve margins**.
2. Students get trapped in the web of unsuitable education loans due to **lack of proper knowledge and understanding** about the loan procedures and banks' terms and conditions.
3. Student loans often result in the opposite of the intended effect. The pressure of loan repayment often puts the individual through **constant stress throughout their career and personal life**, in effect, lowering their productivity and ruining mental health.

### 3. The Need for Sernez

Sernez aims to solve the major problem faced by students. Financing their education. In a country like India, if the student wants to pursue overseas education, the bank process takes almost two to four months to process an education loan. The maximum amount of finance provided by major banks ranges between **\$14K to \$20K** and the interest rates are between **9.70% - 16.50%**. Most of the Asian banks keep a high amount of collateral before they approve educational loan and in the past few years this has become a major source for banks to make money.

In the United States, even though the loan process is fast, the rising interest and initiatives by government to kill programs like PSLF (Public Service Loan Forgiveness) and student aid program has significantly increased the cost of student loans. Currently more than \$100B are given as fresh new educational loan in USA every year. All this at a time when 44 Million American students already owe a staggering **\$1.4T** as unpaid debt.

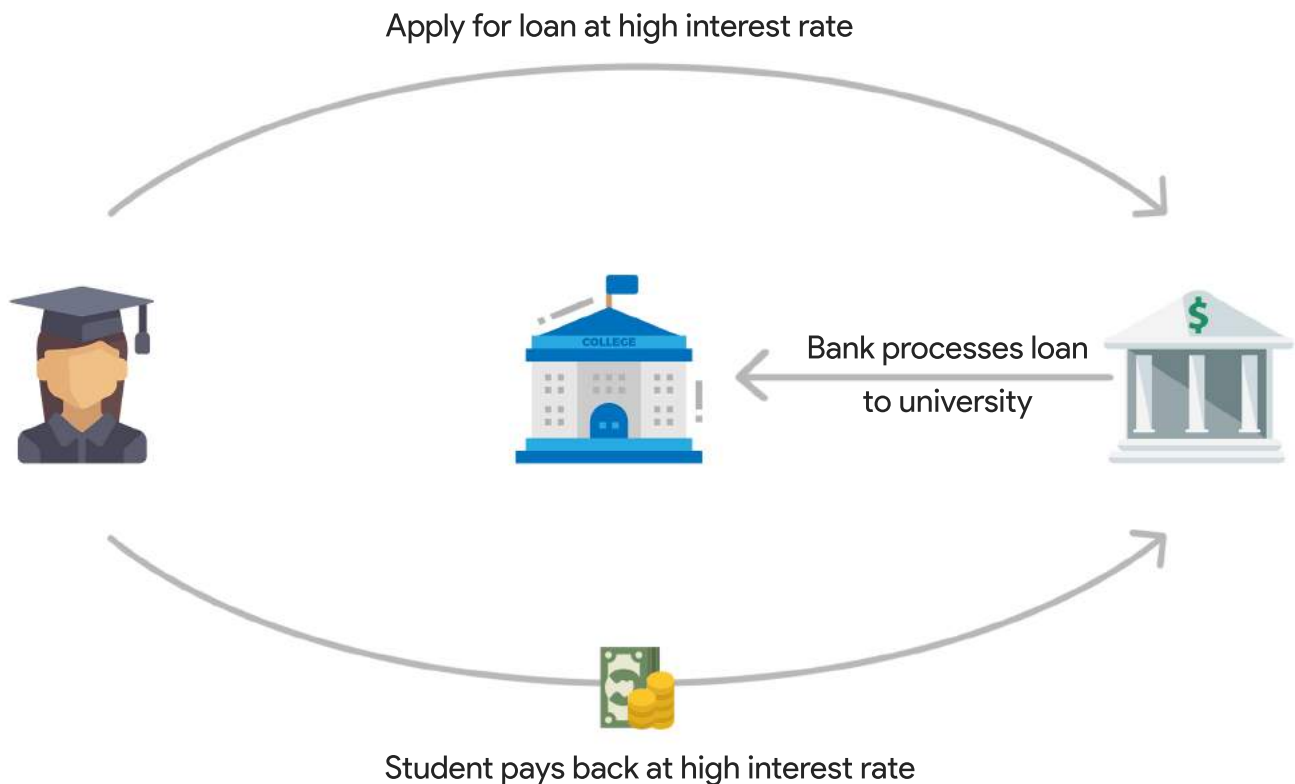
Reference: <http://onewisconsinnow.org/institute/protect-pslf/>



*I graduated from law school 8 years ago with about \$115,000 in student loan debt. I have been making consistent payments under the income based repayment program, and I have been working mostly in the nonprofit sector after a series of internships. I now owe over \$160,000 due to the interest that has accrued, even though I have been making all payments on time.*

*-Shannon  
May 1, 2018  
Brooklyn*

Reference: <https://debtingamerica.wordpress.com/>



That student loan debt is causing young people to delay home purchases is well documented . This means they will have less time to build equity in their home as property values increase. Because, for the average american household, their home equity represents over 70% of their entire net worth at retirement age, the diminished ability to gain home equity in the long run could be a long term crisis in the making.

This is why resolving the crisis not only means finding ways to reduce or subsidize education costs so students don't have such large debts in the first place, but also helping current graduates pay down their debts faster so they can begin to build toward their future.

## 4 . The Sernez platform

### 4.1 Sernez P2P Education Loans

Peer to peer lending is one of the major disruptive forces of the 21st century. Decentralisation, leading to disintermediation, backed by widespread acceptance of the sharing economy is the key to removing middlemen (read banks) from the picture. Sernez has embraced the P2P revolution, offering its users educational loans that are fast, transparent, safe, easy and accessible at lower interest rates from lenders all over the world. All transactions occur directly on the platform, meaning students can receive and pay back loans without having to go through the trouble of the long, complicated and expensive process that the conventional banking system entails.

## 4.1.1 Terminology

### SPQ (Students' Performance Quotient)

A scoring calculated by the Sernez Aurora depending on the data of the student as uploaded on the platform.

### Loan listing

A loan listing is a request by a Sernez borrower for a loan of a specified amount.

### Credit rating

The Sernez Rating is a proprietary credit rating that we assign to each listing. The Sernez rating is a ranking that indicates the level of risk associated with a listing and corresponds to an estimated average annualized loss rate range for the listing. The estimated loss rate for each listing is based on two scores: SPQ of the student and the loan payment returning ability.

The platform uses these two scores to determine an estimated loss rate for each listing, which correlates to a Sernez Rating. This rating system allows for consistency when assigning ratings to listings.

### Notes

Notes are special, limited obligations of Sernez that depends entirely for payment on the receipt of payments under the corresponding Borrower Loans. Notes are suitable only for lenders of adequate financial means. If a lender cannot afford to lose the entire amount of such lender's investment in the Notes, the lender should not invest in the Notes.

### Bidding

Once Notes are generated lenders can bid on it. A bid on a listing is a Lender's commitment to purchase a Note worth the principal amount of the their bid. The payment for the same will be dependent on the payments that Sernez receives on the Borrower Loan described in the listing. Once a bid is placed, it is irrevocable, and the amount of the bid may not be withdrawn from the investor's account unless the bidding period expires without the listing having received enough bids to be funded.

### Default

Default is the failure to pay interest or principal on a loan or security when due. Default occurs when a borrower is unable to meet the legal obligation of debt repayment.

## KYC

Know your customer/Client (KYC) is the process of a business identifying and verifying the identity of its clients. The objective of KYC is to prevent our platform from being used, intentionally or unintentionally by criminal elements for money laundering and fraud activities. During the KYC process we collect personal data of customers such as photos, Address proofs such as passport, Driving license, Identity cards, Social security number, Bank details etc.

### 4.1.2 Registration for Students

Students may sign up on Sernez using their Email ID and telephone number once they have received the endorsement mail from the University. All enrolled students are required to follow up KYC procedures (see section 4.1.1) After signing up, they go through a verification process. Once a student applies for a loan, they have to upload their financial status, current credit status and co-signer information along with supporting documents.

Students may also upload their achievements, social information, grades, passion and other interests. When the profile is completed, Aurora automatically grades it.

### 4.1.3 Registration for Lenders

As of now, the Sernez platform is open only to accredited investors. To become an accredited investor, a lender must furnish an annual income of \$200,000, (or \$300,000 for joint income), for the last two years, with an expectation of earning the same or higher. An individual must have earned the income above the threshold either individually or with a spouse over the last three years.

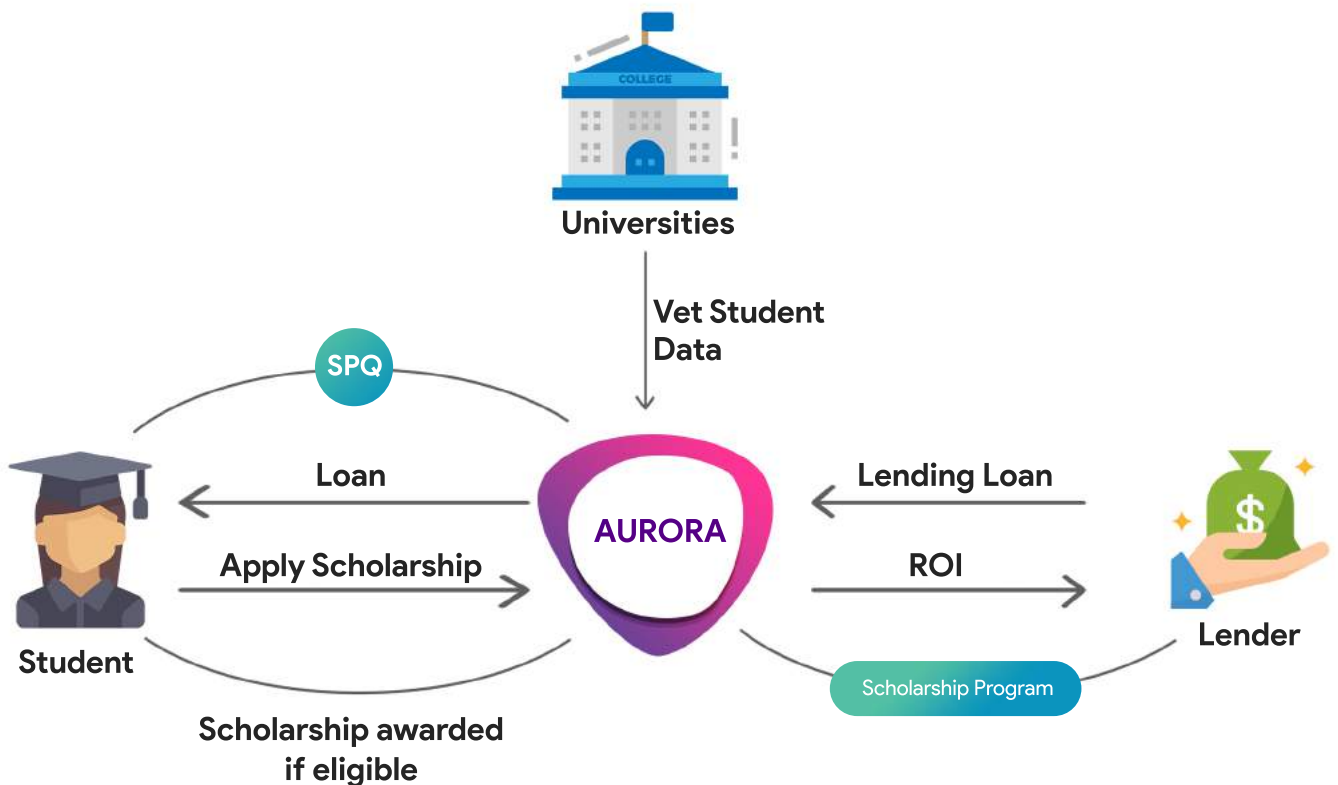
Lenders can sign up using their mail ID and telephone number. Every investor has to go through a KYC and AML screening once they sign up. After logging in, they can update their information while choosing to stay anonymous or public. Lenders must update their bank information and investment profile preferences to complete the registration.

### 4.1.4 The Loan Process on Sernez

1. Any student requiring an education loan **approaches their university** for aid.
2. The **University has to endorse** a student to get enrolled in the Sernez.
3. The **Sernez platform verifies all the documents** that are already checked by the University. Once the verification process is over, the student gets a link to upload more

documents and review the loan documents.

4. **Sernez Aurora calculates a scoring** based on the uploaded data, called the **Student Performance Quotient (SPQ)**.
5. A **loan listing is posted** on the marketplace by the student (borrower).
6. Each listing is assigned an associated credit rating given by Aurora and converted into notes.
7. **Sernez adds additional listing information**, such as the desired loan amount, interest rate and corresponding yield percentage, and the minimum amount of total bids required for the loan to fund. It also includes Sernez Rating and estimated loss rate for the listing, the applicant's debt-to-income ratio, certain repayment information from the applicant's repayment affordability report and the applicant's self-reported annual income range, occupation, and employment status.
8. After a listing is posted, **lenders can place bids** on that listing until the listing has received bids totaling the requested loan amount. The minimum amount a lender may bid is \$50. All bids may be up to 100% of the requested loan amount. A lender who wishes to offer on a listing must have funds in the amount of the bid in his investor account at the time the bid is made.
9. Once the **listing has received bids totaling the requested loan amount, no further bids can be placed**. The maximum length of the bidding period is 15 days.
10. If the **listing does not receive bids equal to or exceeding the minimum amount required** for the listing to fund by the close of the fourteenth day after the listing is posted, the **listing will terminate, and the requested loan will not be funded**.





## 4.1.5 Loan Defaults

Lenders should be aware that the Notes (see section 4.1.1) offered through our marketplace are risky and speculative investments. So there are chances for default (see section 4.1.1) situations on loans. In case of non-payment of an unsecured loan, if renegotiation of terms fails, the investor can:

- Sell the debt to collectors at a discount.
- Refer the debt collectors to recover.
- Independently file a lawsuit to collect the debt, including through automated platform mechanisms.

Based on the experience of the online lending platforms like **Lending Club**, **Kiva** and the statements of banks, we expect that the total amount of **overdue debts on unsecured loans will not exceed 10% and eventually will decrease to 2-5%**.

## 4. 2. Cross Border Lending

Obtaining a student loan is a different process altogether in different countries. No uniform standards exist globally for procuring a loan, and while it is long-drawn-out and exhaustive in some, the incomprehensibly high-interest rates are what spell disaster for the students in a few others. One advantage of Sernez platform is its ability to facilitate an international transaction between lenders and borrowers from different countries where the interest rates are strikingly different.

By opening up different economies for lending, the leveling effects are like never before in history. Sernez creates a win-win situation for both the lender as well as the borrower. For example, the Interest rate in Japan is 1% while in Brazil, it is 35%. And hence a Japanese lender can loan a Brazilian student for much better mutually agreeable interest rates. Currently, as all cross-border transactions are primarily regulated and restricted, and since no mutually acceptable currency is available, the markets and interest rates remain compartmentalized among different countries. Lenders can use Sernez token, RNZ (see section 6) and fiat for cross-border lending through cross border payment system.( see section 4.6)

## 4. 3. Recurring Investment

Our automated loan search tool, Sernez Recurring Investment (SRI) is an automated loan search tool that allows lenders to easily invest in Notes that meet their specific investment criteria by automatically bidding any available funds in their account on Notes that match their selected parameters, in accordance with their specified instructions. A lender using Sernez Recurring

Investment is asked to indicate

- The Sernez Rating or Ratings he or she wishes to use as search criteria
- The amount he or she wishes to invest per Note.

If he or she wishes, the lender can further customize his or her investment criteria by applying one or more of several dozen additional search criteria, such as loan amount, debt-to-income ratio and credit score.

The investor can also set aside a specific amount of his or her funds as a cash reserve that will not be invested by the Sernez Recurring Investment tool.

## **4. 4. Sernez Talent Portal**

Sernez is not just a Peer to Peer lending platform. It is an entire education ecosystem designed for students who can avail not just finance for their education but increase their skill set, apply for jobs or take freelance projects as per their choice and get paid for the same.

Visibility and access to untampered records of the student, including their profile and projects, is the perfect enabler for finding the best talent. Sernez provides a secure and transparent platform that students can use to showcase their skill profile and expertise to prospective employers. Every project that the student undertakes as a freelance on Sernez gets added to his/her profile and adds value. Since this listing is automated, the authenticity of the profile is guaranteed. The additive index of the profile or the “Sernez score (SPQ)” can be used as a base pointer to understand the level of expertise of the student.

### **4. 4. 1. Hiring/Freelance Opportunity**

Executives often spend thousands of dollars and a great deal of time on hiring one right talent for their company. Another fact is that a considerable number of students end up in jobs that do not utilise the best of their skill and talent. Sernez solves this by providing visibility to students as well as opportunities. Each student’s skill profile and academia details are uploaded onto the Sernez platform. This information is authentic and cannot be tampered with once submitted. But the students are permitted to add progress or updates in their profile. Companies and other institutions can award the student with freelance projects and internships based on the profile visible there. This can go one step ahead to provide them job opportunities- which makes it a win-win situation for the students as well as companies. This will enable the process of connecting the right talent to the right opportunities.

## 4. 5. Sernez Foundation and Scholarship Fund

Sernez aims to build the largest collective scholarship fund for enabling educational ecosystems around the globe, primarily focusing on second and third world countries. This fund would be managed under a separate, non profit foundation that includes Sernez Community players as well as partner institutions and universities.

The Sernez foundation fund will be community-driven fund for student scholarships, ecosystem development, and community activities across the world. Students, Institutions as well as governments can apply for scholarship grants and research projects. The Community would decide on selecting the deserving projects. The funds shall be released on milestone basis and achieving of predefined KPI

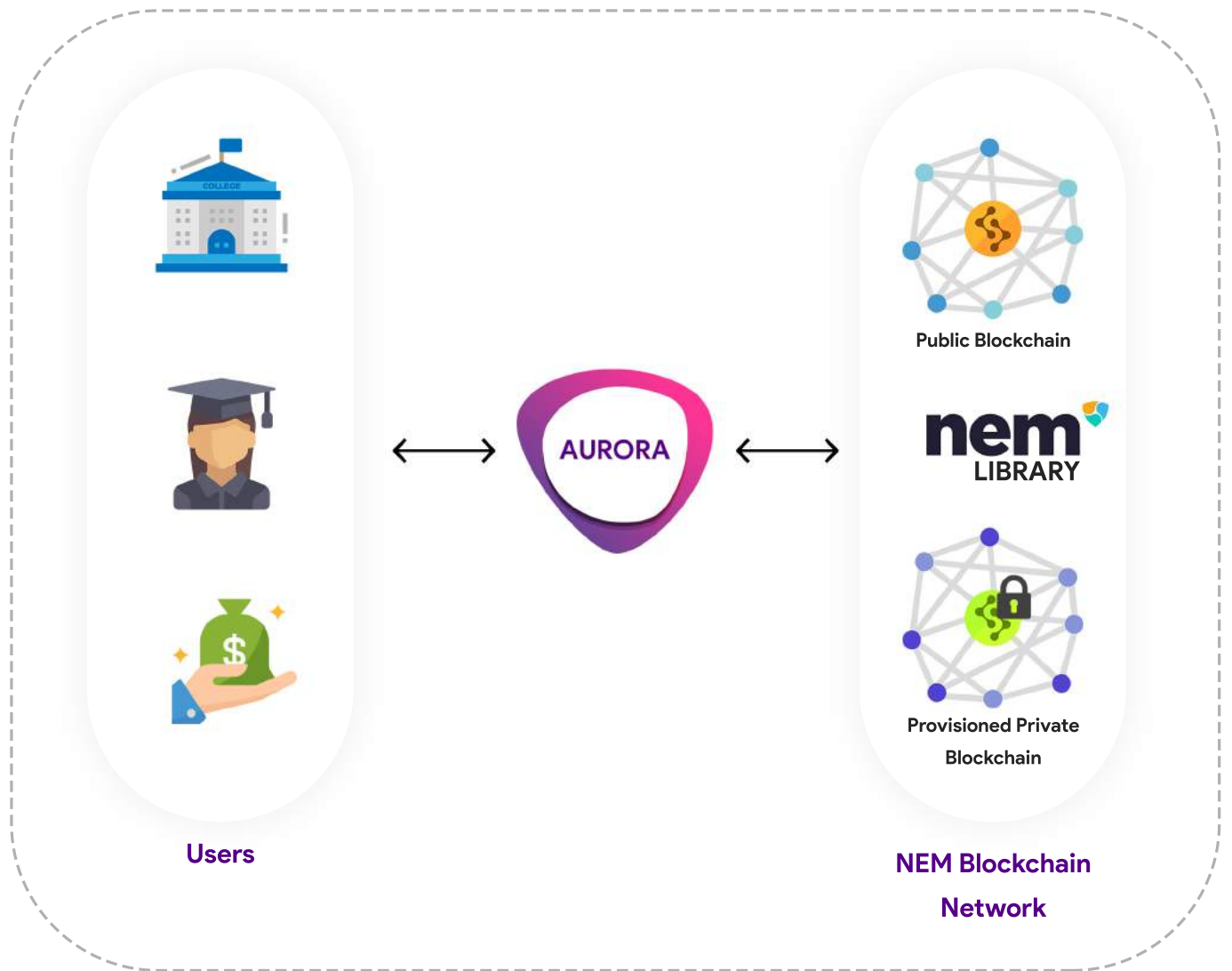
## 5. Technology

Sernez is built upon the NEM blockchain network. The NEM node software verifies transactions, maintains a database, synchronizes with other nodes, and maintains stability and trustworthiness to create a network that is fast, secure, and scalable. Sernez uses both NEM's private and public blockchain. Provisioned Private NEM Blockchain stores the user's sensitive/private data. Public blockchain stores user public data.

### 5. 1 Architecture

Sernez runs on a hybrid model having private chains and public chains . The data too is stored in a hybrid model with classified data stored within the platform and other data like skill profile displayed on the chain. The classified data are accessible only to Sernez servers and pre validated application allowed nodes.

Documents and data are stored using the NEM Apostille Design, wherein instead of storing the entire data on the chain, hash values of the files are created and stored in the nem private blockchain. This makes sure that no outside nodes can access or edit the sensitive data while also reducing the bandwidth required to run the chain.



## Sernez Platform

### Users

Students , Universities and Lenders (A lender may be an individual lender, charity organizations or Corporate social responsibility organizations or Scholarship Funds).

### Aurora

Sernez Dapp logic , smart contract , data source, contract logic .

### Blockchain

Sernez powered by NEM blockchain network using both private and public blockchains.

### Data from Students

KYC documents (see section 4.1.1), Certificates, Past work experience, Skills etc.

## University Data

Students , Universities and Lenders (A lender may be an individual lender, charity organizations or Corporate social responsibility organizations or Scholarship Funds).

## Companies

Companies may access student profiles on Aurora to provide freelance/internship opportunities as well as to hire talent. Verified documents help companies to quicken the pace of the hiring process and reduce hiring burn rate.

## 5.2 Aurora by Sernez

Aurora is the core engine of Sernez which controls and monitors all the activities in the Sernez platform. Aurora facilitates communication with the NEM blockchain layer by consuming NEM libraries. Aurora is also responsible for handling all the data entering the platform while keeping it secure . The off Chain and On chain design of storing data is taken care here. (see off chain-on chain design in section 5.1.3). On a high level, Aurora acts as the business logic layer that manages as well as integrates all the decentralised applications built on the Sernez framework. Smart assets like RNZ tokens are constructed as Mosaics in the namespace of NEM blockchain and it is managed by Aurora.

## 5.3 Nem Blockchain Integration

We are using an advanced blockchain technology called NEM Blockchain which is an improvement on existing blockchain technologies.NEM uses a new consensus mechanism called Proof of Importance (PoI). Unlike Proof of Work (PoW), it is environmentally sustainable and does not require large scale computing resources in perpetuity. PoI is similar to Proof of Stake (PoS) except that it is not solely derived from the size of an account's balance. It incorporates other behaviors that are believed to be positive for the holistic economy. In this way, it attempts to reward active economy participants at the expense of inactive ones and dampens the rich getting richer effect that is inherent to PoS.

NEM provides security and trustless computing. NEM has built-in support for multisig transactions and encrypted messages. Also NEM apostille, another feature by NEM helps sernez to makes a fingerprint of the document by hashing its contents and then signing that hash with the private key of the user. This will help sernez to store data securely.

NEM Technical Reference – [https://www.nem.io/NEM\\_techRef.pdf](https://www.nem.io/NEM_techRef.pdf)

What is POI? - <https://blog.nem.io/what-are-poi-and-vesting/>

## 5. 4 Off chain - On Chain Design

Sernez works on a hybrid design where user sensitive data internal to the platform are stored Off Chain. Other public data that needs visibility and accessibility like Student Performance Quotient and transaction details are stored on the chain. Sernez isolates the computing complexities from the blockchain by keeping the code and execution of the contracts away from the chain, but their hashes and log On-Chain thereby preserving the fundamental principles of decentralized ledger technology.

It helps make the platform lightweight and as such faster. It strives to only put data and assets on the blockchain that makes sense and helps encourage privacy and insulation of private information to the outside world.

## 5. 5 Scalability

Scalability is a critical criterion for a decentralized application. By using the underlying NEM blockchain advantages, the platform can achieve transaction speeds of up to 4000 per second; compared to 8 for bitcoin and up to 15 for Ethereum. NEM provides a wide range of combinable functionalities through its REST API which helps Sernez business layer to extend up to any level in scale. Also, the mix matching and combining Namespaces, Mosaics, multi-signature and multi-user wallet and smart contracts, etc. allows for a wide variety of application frameworks to be built.

## 6. Sernez Token

Sernez (RNZ) will be a Nem based token. The RNZ token functions as the currency of use within the Sernez platform. Platform fee will be made using RNZ tokens. Users can pay interest on loans using Sernez, and there will be no platform fee if the business is done with RNZ tokens. In future, students can pay tuition fees to universities using RNZ instead of FIAT. Freelance smart contracts are transacted and settled using RNZ tokens. The RNZ token arising out of this has no security instrument tied to it and is a consumptive or utility token the value of which is determined by market demand and supply

## 7. Regulation

The lending and securities industries are highly regulated. We, the Notes and the Borrower Loans are subject to extensive and complex rules and regulations. We also are subject to licensing and examination by various federal, state and local government authorities. These authorities impose obligations and restrictions on our activities and the Borrower Loans made and Notes issued through our marketplace. In particular, these rules limit the fees that may be assessed on the Borrower Loans, require extensive disclosure to, and consents from, borrowers and borrowers, prohibit discrimination and impose multiple qualification and licensing obligations on marketplace activities. Failure to comply with these requirements may result in, among other things, revocation of required licenses or registration, loss of approved status, voiding of loan contracts, indemnification liabilities to contract counterparties, class action lawsuits, administrative enforcement actions and civil and criminal liabilities. While compliance with such requirements is at times complicated by our novel business model, we believe we are in substantial compliance with these rules and regulations. These rules and regulations are subject to continuous change, however, and a material change could have an adverse effect on our compliance efforts and ability to operate.

The ability to serve a global student base is key to Sernez Lending business model. As a result, a considerable budget will continue to be allocated towards the onboarding of new jurisdictions. This process entails meeting legal and licensing requirements to ensure regulatory compliance across continents and international borders. This also often entails establishing regional offices, legal counsel and several service providers.

This offering is highly speculative and the Notes involve a high degree of risk. Investing in the Notes should be considered only by persons who can afford the loss of their entire investment. Payments on the Notes depend entirely on payments Sernez receives on corresponding Borrower Loans. If a borrower fails to make any payments on the corresponding Borrower Loan related to a Note, payments on such Note will be correspondingly reduced.

The Notes and Sernez Management Rights involve a high degree of risk. You should carefully consider the risks described below before making a decision to invest in the Notes and Sernez Management Rights. If any of the following risks actually occurs, you might lose all or part of your investment in the Notes and Sernez Management Rights. While we believe the risks and uncertainties described below include all material risks currently known by us, it is possible that these may not be the only ones we face. If any of the risks actually occur, our business, financial condition, operating results and prospects could be materially and adversely affected.

## 8. Disclaimer

This material does not constitute any representation as to the suitability or appropriateness of any security, financial product or instrument. There is no guarantee that investment in equity of Sernez will be profitable or will not incur loss. This information does not have regard to the specific investment objectives, financial situation, and the particular needs of any specific person who may view its investor materials.

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Investors should note that security values may fluctuate and that each security's price or value may rise or fall. Accordingly, investors may receive back less than originally invested. Past performance is not a guide to future performance. Investing in any security involves certain risks called non-diversifiable risk. These risks include market risk, interest-rate risk, inflation risk, and event risk. These risks are in addition to any specific, or diversifiable, risks associated with particular investment styles or strategies.