

# Abstract

---

Growr is open, fair and sustainable micro-lending protocol on top of bitcoin. Growr enables micro-entrepreneurs to build their **self-sovereign credit record** and receive **fair productive loans** without over-collateralization, bringing **real-world yield** to decentralized finance.

Growr aims to bridge the financial gap in the productive microfinance using decentralized tools to bring microfinance to its roots and goals. They are using self-sovereign identity to give the identity holders the access and ownership of their credit record, which can then enable access to uncollateralized and undercollateralized loans from traditional and DeFi liquidity. They are using smart contracts on top of Bitcoin to automate the process of funding and to provide end-to-end transparency to the lenders about how their funds are spent.

Growr team imagines the world in 2040 with 1 billion people — currently considered unbanked or underbanked — having fair and secure access to the financial services they deserve. Bitcoin is a global open network that already provides free access to the hardest money that has ever existed, and the ability to pay and get paid instantly with nearly zero fees, thanks to its second-layer Lightning network. Growr is building on top of that to complete the stack of financial services that every single person deserves, starting from sustainable productive financing and financial health tools with personalized guidance.

By building Growr, we are addressing significant global challenges such as high price of financial services, gender inequality, lack of trust and bad financial health. Bringing true value to all protocol participants, Growr could be a catalyst for the next wave of exponential adoption of decentralized finance on RSK network.

## Protocol Overview

---

### Problem

---

Today, a quarter of the world's adult population does not have an account ([link](#)). In some countries in the developing world, financial exclusion is as high as 90%. Most of the unbanked population do not have a "job" — they are smallholder farmers, micro-entrepreneurs or self-employed. They are all facing a staggering financing gap of over US\$5 trillion per year [link](#). In addition, only a third of adults worldwide are financially literate, and as a result can easily become prey to loan sharks ([link](#)).

Today, most financial service providers do not solve those problems. They are clueless about people's real-life problems, needs and aspirations. There's a complete disconnect between the person and the provider. Banks, and even more so non-banking lenders, have a negative image especially with younger generation, who, as a result, are more likely to go to the dentist than visit a bank.

While others are working on democratizing access to accounts, payments and remittances through the use of decentralized protocols, the typical DeFi protocols today require over-collateralization, which is completely out of the reach of the unbanked.

### Solution

---

Growr protocol aims to be a bridge between 2 worlds – decentralized finance and microfinance, while addressing each one's challenges. The protocol enables micro-entrepreneurs to receive instant productive loans based on their self-sovereign credit record, without the need for over-collateralization. In contrast to traditional microfinance, Growr enables an open and global lending marketplace that connects borrowers to both traditional and decentralized lenders, enforcing fair competition for pricing and the fully transparent deployment of capital down to each micro-loan.

The Growr protocol combines instant unsecured loans, innovative credit assessment models, decentralized identity and financial health incentivization. How does Growr work:

1. Borrowers rely on trusted parties to assert facts about them in the form of credentials. Those trusted parties include local organizations that have knowledge about their community – cooperatives, unions, chambers, employers, merchants.
2. Those local organizations might additionally partner with fintechs, retailers or employers or other participants in the respective economy to submit a joint proposal for credit line to one or more lenders. The lenders assess the proposed loan parameters, price (rate and fees) and eligibility criteria, and depending on their risk/reward appetite, approve or reject the credit line. In case of positive outcome, the lenders publish a new loan offer to the marketplace.
3. The borrowers then are able to use their financial record with collected credentials to easily apply for a loan from the marketplace and receive the money they need to achieve their goals.

The Growr protocol contributes with a strong positive impact on financial inclusion by providing open access to basic financial services:

- **Borrowers**, represented by self-employed, micro-businesses, smallholder farmers and the communities of which they are members, are provided with access to fair productive loans to grow their business. In addition, they receive help and promotion of financial health and good business practices.
- **Suppliers and buyers** that support the development of sustainable local economies have a revenue growth, as well as easier and streamlined agreements with a cooperative instead of with each member individually.
- **Liquidity providers** in the ecosystem benefit from new customer base and new yield generation opportunities on a global scale, and in addition they get a complete transparency of the impact of each dollar they invest.

The key elements of the protocol are:

- **Growr core protocol** – open and global lending marketplace on top of Bitcoin that connects borrowers with lending providers who publish their targeted loan offers with predefined conditions and eligibility criteria.
- **Self-sovereign credit record (SSCR)** – a global digital identity, based on W3C's DID and VC data models, owned and managed by the user, and storing various protocol-specific verifiable credentials based on user's financial health metrics, on-chain activity, and trusted off-chain data.
- **Decentralized credit risk assessment** – a framework for establishing trust based on alternative risk assessment and verifiable credentials instead of requiring an on-chain collateral.
- **Financial Health incentivization** - embedded protocol tools and features for personalized financial health journeys, such as "learn and earn", "saving habits" and "controlled spending", that can be used for additional credit assessment and incentivization of the borrowers.

# Key Concepts

---

## Decentralized identity

---

### DIDs

Growr protocol implements W3C's architecture for decentralized identity (DID). DID is a new type of identifier that enables verifiable, decentralized digital identity. DIDs are URIs that associate a DID subject (e.g., a person, organization, thing, data model, abstract entity, etc.) with a DID document allowing trustable interactions associated with that subject. DIDs have been designed so that they may be decoupled from centralized registries, identity providers, and certificate authorities. Specifically, while other parties might be used to help enable the discovery of information related to a DID, the design enables only the controller of a DID to prove control over it without requiring permission from any other party. More info about DIDs on [this link](#).

### VCs

Growr protocol implements W3C's architecture for **Verifiable Credentials (VCs)**. Verifiable Credentials (VC) are global uniformed provable claims associated with the subject of the DID. They are cryptographically secure, privacy respecting, tamper-evident and machine verifiable. They can be used to build universally verifiable presentations, which can also be cryptographically-verified.

Verifiable credentials are provided by **Credential Issuers** – that is, centralized or decentralized third parties, asserting certain facts about the DID owner. Verifiable credentials are consumed by **Verifiers** using the concepts and data models for **presentation exchange**. Verifiers verify that:

- The credential presentation is signed with the subject's DID.
- The credential is signed by a trusted Issuer.
- The credential is not expired.
- The credential is not revoked.

More info about VCs on [this link](#).

## Growr's Self-sovereign credit record

The Growr protocol relies on a new type of decentralized identity that we call the **Self-sovereign Credit Record (SSCR)**. The SSCR is intended to represent user's unique global identity and financial record, storing various protocol-specific verifiable credentials based on borrower's financial health metrics, on-chain activity, trusted off-chain data, peer vouching, and others. SSCR is the borrowers' financial record in their pocket.

Verifiable credentials in SSCR can be (but are not limited to):

- *KYC* credential. This credential proves successfully passed KYC process (including AML/CFT risk check) and can be issued by any last-mile provider or a traditional third-party identity verification service.
- *Financial Data* credential. This credential contains various financial data of a user (such as products and transaction history) and can be issued by any financial institution (where the user has a saving account)

or trusted financial data processing service (to which the user provides account statement information).

- *Savings History* credential. This credential proves that the user is making regular micro-payments to his/her saving account. It could be issued by any trusted financial institution or savings account provider.
- *Financial Health* credential. This is a special credential issued by the protocol itself for successfully passed "financial health treatment" through education and/or mentoring, as well as earned through regular on-time repayments of past loans received by the protocol.
- *Community certificate* credential. This credential is issued by a local organization (cooperative, union, chamber) or an employer, asserting the membership of the borrower in the organization.
- *Social Vouching* credential. This credential is received by endorsement from other protocol users, who have certain reputation level and/or are trusted by the protocol.
- *Credit Score* credential. This is a "combined" credential, summarizing other atomic credentials, and representing the overall credit score of the Borrower.

## Lending

---

### Traditional lending

In traditional lending, a loan is given by lenders (banks and other financial institutions) to borrowers, and the borrowers repay the loan together with the lending price (the interest). But this price appears to be very high, especially for people around the world that live with less than \$2 per day.

The lenders determine by themselves all loan conditions - accepted risk levels, required collaterals, interest rates, fees, and etc. Very often, lenders don't know the borrower and they lack the proper risk assessment tools to determine the creditworthiness of the borrowers. If the lenders feel there is a higher risk of not being paid back by a borrower, they will charge that borrower a higher interest rate.

In the traditional lending, the lenders use the services of private companies or government agencies, playing the role of a credit bureau. They collect data about borrowers, they calculate their credit rating and sell it for their own benefit.

With this model, being poor is actually very expensive because the poorest are either excluded from the financial system or they fall prey to financial sharks offering loans at expensive and unfair conditions.

### Microfinance

Microfinance, as one of the lending models, aims at providing useful financial services to millions of people. Microfinance institutions (MFI) lend money on a large scale, usually to large group of people in dense regions, in a minimally subsidized, businesslike way. To monitor and manage multiple borrowing, MFIs rely on a combination of reputation, knowledge of the client, collateral, cosigners, and enforceable contracts.

Microfinance was reinvented in the late 1970s with the noble vision of Dr. Muhammad Yunus to provide micro-credit and later more financial services to poor communities, in a fair and sustainable manner. However, over the course of the last decades, there has been a significant deviation from this original purpose, with many MFIs changing their focus from social impact to profit and replicating the narrative but not the good practices. In some well publicized cases, MFIs have contributed to increasing poverty rather than decreasing it.

### Decentralized lending protocols

Over the past 2 years, decentralized borrowing and lending protocols entered the DeFi space with the potential to fundamentally reinvent the financial infrastructure enabling people to transact with each other globally, securely and permissionless. Decentralized lending protocols target advanced users and let them lend or borrow digital assets without going to a centralized intermediary. Users deposit digital assets into liquidity pools, which become funds that the protocol can lend out to other users.

DeFi protocols aim to automate lending and would not be willing to assess individual borrowers. That is why, they require a collateral. This means that onchain assets of the borrower are used to secure a loan. The borrower provides the asset to secure the loan, and if the borrower defaults on the loan, the lender can take possession of the asset and sell it to cover their loss. Moreover, they often require overcollateralization i.e. the amount of locked assets as collateral exceeds the loan amount.

On top of that, most DeFi yield at the moment comes from financing speculative activities and not the real-world economy, or from liquidity subsidies (so-called "yield farming"). It is a well-recognized problem that DeFi needs real-world yield.

## Growr's decentralized credit risk management

Growr protocol approaches lending differently. The protocol aims at providing instant insecure loans based on risk assessment and verifiable credentials instead of requiring an on-chain collateral. Instead of relying on risk data locked within proprietary databases, Growr provides an open credit rating model, which also preserves the privacy of the borrowers through a self-sovereign identity. In contrast to the traditional credit bureaus, Growr puts the users in control of their data by storing their credit record in "their own pocket" without dependence on any central authority or intermediary.

In addition, the unbanked population is very often part of the blacklists of the credit bureaus, on which the traditional lenders rely, and thus they are excluded from the current lending market. Growr aims at providing credit rating based on alternative data sources, such as financial health metrics, trusted organizations, and peer vouching.

But how does it work? Borrowers collect credentials into their own private financial record, Lenders use these credentials to better assess creditworthiness, and Trusted parties are incentivized to provide the credentials. This innovative approach for decentralized credit risk management splits the responsibility between all protocol participants:

- *Credential Issuers* assert facts about the borrowers in the form of credentials.
- *Credential Verifiers* validates the credentials and asserts borrower's eligibility to receive a loan from a given credit line.
- *Risk Assessors* review credit line proposals and determine their credit rating.
- *Trusted Registries* validate that credentials are issued by trusted issuers.
- *Smart Contracts* take decision based on the input from the above-mentioned stakeholders.
- *Protocol Governance Board* decides which participants are trusted and excludes the ones that misbehave.

Each participant is incentivized by the protocol to fairly fulfil its duties, as follows:

- With positive behavior in terms of regularly repaid loans, *Borrowers* increase their credit risk score. And better risk score translates to better lending conditions - increased amount limit and decreased interest rate.

- Trusted parties (*Credential Issuers* and *Risk Assessors*) receive a fee for the services they provide. In case of poor execution of their risk management function, the respective participant is blacklisted from the protocol.
- *Lenders* and *Liquidity Providers* distribute part of the profit with all participants to motivate them to properly execute their risk management functions in order to decrease their cost of default and respectively to increase their profit.

## Growr's two-tier pooling

The Growr protocol is able to operate on 2 tiers – global pools and local ponds. Global pools are funded by Liquidity Providers who then delegate the actual lending activity to local guilds with local lending ponds.

A lending pool can be created by any institutional investor with enough capital who specifies the initial pool parameters. Liquidity Providers can safely deposit funds into lending pools according to their preferences. Lending pools can be provided either by traditional financial service providers, as well as by DeFi lending protocols.

Lending ponds (credit lines) represent specific loan offers in the global marketplace. There are 2 common ways to create a lending pond. In the first use case, lending ponds are created by local lenders (FinTechs or other financial service providers). Different lenders have varying levels of risk tolerance, depending on the laws and regulations in their jurisdictions, as well as on their profit goals. Therefore, each pond can have its own parameters (such as loan amount and duration), rates and eligibility criteria.

In the second use case, local organizations or cooperatives, in partnership with retailers or employers or other participants in the respective local economy, submit a joint proposal for credit line to one or more lenders. The lender assesses the proposed loan parameters, price (rate and fees) and eligibility criteria, and approve or reject the credit line. In case of positive outcome, the lender publishes the new loan offer to the marketplace and thus creates the pond.

The protocol supports automatic pond liquidity management. It allows local ponds to apply for funds from a pool resulting in so called "contract-to-contract (C2C) lending". Based on the Pond utilization, a Pond smart contract can automatically apply to a Pool smart contract for a loan (up to the approved credit limit). Depending on the pond financing period, fund requirements, proposed risk model and eligibility criteria, the pool owner decides to approve (i.e., to whitelist the Pond address in the Pool smart contract) or not the funding to the pond. The Pond is required to regularly repay the interest fee to the Pool. Depending on the configured utilization threshold, the Pond can repay partially or fully the loan to the Pool smart contract.

## Financial health

---

### Financial health dimensions

Dealing with money, especially borrowed from others, requires knowledge and high responsibility. That's why it is very important that everyone gets a financial health treatment for long-term improvement of their financial health. It's not about a single transaction, but achieving more throughout people's lives, and ultimately reaching a better lifestyle and financial independence.

Financial Health treatment includes building knowledge and proper habits in 4 financial dimensions:



- *Spending*. The Spending dimension is measuring how well people are balancing between the money they earn and the money they spend. Surprisingly, even people who earn a lot can spend their income without thinking too much. As a result, they live a paycheck-to-paycheck lifestyle, which prevents them to follow their long-term goals and dreams. Budgeting is a powerful tool in this dimension.
- *Savings*. The Saving dimension shows how people are doing in terms of putting some money aside. Many people do not understand where to keep their money in order to protect it from inflation and other dangers that may prevent it to keep its value over time. Savings are very important as they can take people's financial life in their hands.
- *Borrowing*. The Borrowing dimension demonstrates how well people are able to manage their debt. It assesses whether people are debt-free, whether they feel comfortable having a loan, and whether their debt is manageable or too much and leading to overdue payments. Remember that debt is not always bad – if people know how to use it.
- *Planning*. The Plan dimension is perhaps the most important indicator for people's ability to maintain financial health in the long run. Most people do not have a systematic approach to considering two key elements in financial planning - potential risks and key life events in the future. However, tomorrow starts today.

## Growr's financial health tools

We, in Growr, understand that delivering money and financial services to the poor does not automatically reduce their poverty. Therefore, the Growr protocol is designed to incentivize good financial health – that is, improving financial literacy and behaviors.

To promote improving financial literacy and behaviors, Growr protocol includes a set of embedded features that will enable borrowers to receive better financial services:

- **"Learn and earn"**; that is, before applying for a loan, the user must go through education and mentoring program in order to collect credentials for financial health improvement.
- **"Goal-based" financing**; that is, before applying for a loan, the user must declare a specific goal related to his/her real-life need, and deposit initial savings towards it.
- **"Savings discipline"**; that is, before applying for a loan, the user must create a saving habit by executing regular micro-payments to his/her saving account.
- **"Financial reputation"**; that is, with regularly repaid loans and controlled spending habits, the user creates a long-term positive financial reputation that ultimately provide him access to benefits such as cash-back amounts and future loans with better conditions.

The tools above are just the starting point of Growr's incentivization program, other tools will be designed and implemented with each future protocol version.

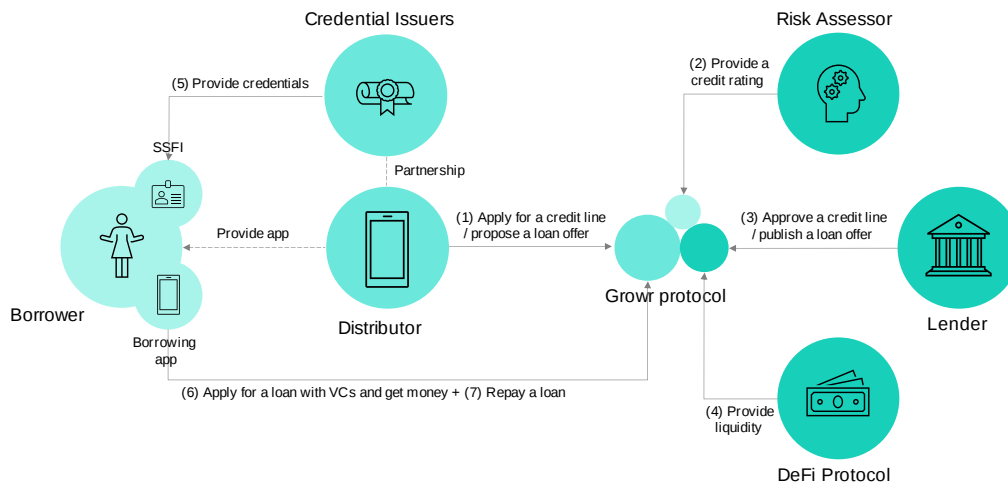
## Protocol Mechanics

---

### How it works

---

Below is a high-level overview of Growr protocol:



## How Growr works?

- (1) Local distributors (such as cooperatives, guilds, wholesale buyers or even MFIs) create credit line applications with details about their local activities and their financing needs. The distributors could also provide a partial collateral as a first-loss capital to cover potential losses from bad debtors.
- (2) Risk Assessors, working for a lender or provided by a third-party, review each credit line application, to assess the risk and provide a credit rating.
- (3) The lender (traditional financial institution or a fintech) approve the credit line if it fulfils the risk policy. Upon approval, the Lender creates and setups a lending pond in the loan marketplace with a predefined eligibility criteria.
- (4) Global liquidity providers can approve additional funding to the lending pond, fully delegating the actual lending activity to the lender and the protocol.
- (5) To enable the local community to access the loan marketplace, the distributor provides a borrowing application to its trusted community members. After quick onboarding, the borrowers must receive the required verifiable credentials in their financial record - either from the distributor or from other third parties (financial providers, merchants, wholesalers, employers, NGOs).
- (6) Borrowers go through a simple application process to receive the loan from the credit line after asserting their eligibility with the verifiable credentials. The disbursed amount is received by the borrowers in the borrowing application, where they can make a direct payment to a merchant or use it in another way to achieve their goals.

The Growr protocol aims at standardization of the protocol mechanics. However, depending on the protocol participants and the tools and services they use, implementation details might vary. In general, we can distinguish the following use case specifics.

- Protocol access: Custodial vs Non-custodial borrowing application
- Liquidity: Separate Lender and Liquidity provider vs Lender providing the liquidity
- Distribution: Separate Lender and Distributor vs Lender covering the distribution process
- Loan payments: On-chain vs Off-chain

## Protocol Participants



## Borrowers

**Borrowers** get easy access to fair loans. They apply for funds from a loan marketplace and then repay the funds with added interest and/or fees. Borrowers gradually receive better conditions for positive financial behavior. They can receive “cash back”-style rewards based on their improved financial health (i.e., regular loan repayment and proof of financial learning), as well as for referral of other well-behaved Borrowers.

Borrowers can access the protocol via a Distributor in custodial model or via a decentralized App in non-custodial model.

## Distributors

**Distributors**, or also called **Last-mile Providers**, intermediates access to the protocol to a specific group of Borrowers in a custodial model with a simple UX. Distributors can be local communities and cooperatives, employers, merchants, or regulated financial institutions/fintechs. The role of the Distributor is to onboard and vet the users into its own digital means (e.g, a mobile application) and then facilitate access to the protocol. Financial institutions can combine the role of a Lender and a Distributor.

Some Distributors could be also **Guarantors** providing first-loss capital and cover for missing credentials certain specific borrower groups (e.g., women, employees, unemployed, community members, etc). Guarantors deposit funds into a Safety Fund, from which certain ponds can claim money in case of payment incidents.

## Lenders

**Lenders** publish offers to the loan marketplace as they create and fund ponds using own funds or by borrowing from global pools. Lenders can be financial service providers (regulated lenders) or local communities (informal lenders). They receive yield based on the pond profitability, and the pond yield tend to be higher than the pool yield, rewarding the skin-in-the-game participation of the Lender. Some Lenders might fully cover the role of a Liquidity Provider.

## Liquidity Providers

**Liquidity Providers (LPs)** are global investors or DeFi pools who provide funding and then delegate the actual lending activity to the Lenders. Liquidity Providers allocate capital to lending pools and get rewarded with yield based on the pool profitability. Generally, the global pool yield will tend to be lower than the pond yield due to the wholesale lending nature of the pools.

## Credential Issuers

**Credential Issuers** serves an important risk management role in the protocol. They are centralized or decentralized third parties (financial providers, local cooperatives and communities, merchants, employers, NGOs) that provide **verifiable credentials** to borrowers to assert facts about them. Credential Issuers receive a fee for the credentials they are issuing.

## Risk Assessors

Credit risk assessment is a crucial component of the Growr protocol and the **Risk Assessor** is a key participant. They review applications for new credit lines, assess the proposed loan parameters, price (rate

and fees) and eligibility criteria, and calculate a credit rating. The Risk Assessor is rewarded with a fee according to its usage. The Risk Assessor could be "owned" by Lenders or Liquidity Providers to ensure they can manage their own policies, or could be provided by the protocol or trusted third parties.

## Other Risk Assessment roles

### Credential Verifier

Credential Verifiers consume credential presentations and verify that the credentials are valid i.e. the credentials are issued from trusted Issuer, they not expired and not revoked. This role is usually covered by the protocol but some Lenders might integrate their own verification service.

### Credit Risk Scorer

In case of a more sophisticated pond eligibility requirements, Lenders might integrate a module for additional credit assessment/scoring techniques, including scorecards, ML models, and others. The result of this additional assessment is a credit score, which is then matched with the pond's credit score requirements. The Credit Risk Scorer could also participate in the protocol as a standalone Credential Issuer and issue a credential with the calculated score.

### Credit Risk Reviewer

Risk Reviewers are employed by a Risk Assessor (or the protocol itself) to review a loan application and interview the Borrower in order to generate additional confirmation or vouching credentials used to endorse her/him. The Credit Risk Reviewers could also participate in the protocol as a standalone Credential Issuer and issue a credential with the calculated score.

## Payment Processors

**Payment Processors** facilitates the payment processes in the protocol by providing different off-chain payment services. On the one side, they can provide on-ramp and off-ramp services, and on the other side, they facilitate and settle fiat payments between Borrowers and Lenders, and between Lenders and Liquidity Providers.

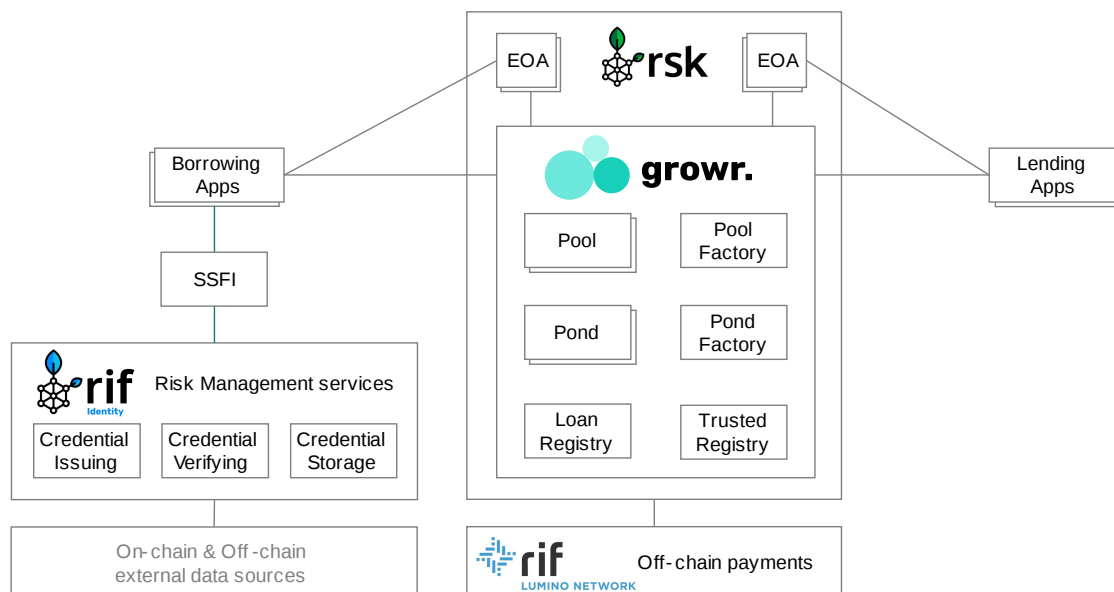
## Growr Protocol

The Growr protocol and its components are supposed to cover the following functions:

- **Loan Marketplace:** Growr provides infrastructure and tools and for decentralized loan management.
- **Integrations:** Growr provides integration with Lenders' systems for credit line management, integrations with Liquidity Providers' systems for liquidity management, and integration with Payment Processors' systems.
- **Protocol Access:** Growr provides web and mobile applications to access the protocol.
- **Credential Verification:** Growr provides credential verification service asserting that a given Borrower matches the eligibility criteria of a given pond.
- **Risk Assessment:** Growr provides credit line assessment service.
- **Governance Board** for protocol monitoring, changes implementation and fraud prevention.

# Protocol Components

## Components Overview



## Core Protocol

**Growr core protocol** represents a global decentralized marketplace where Lenders publish their targeted loan offers with predefined conditions and eligibility criteria. It is implemented as a smart contract system on top of blockchain. The protocol will be deployed on RSK mainnet, powered by the most secure network - Bitcoin. The Growr protocol consists of set of smart contracts:

- *Pool Factory* smart contract. Enables creation of new lending pools.
- *Pool* smart contracts. Support deposit & withdrawal operations from its owner, enable ponds to apply for credit lines.
- *Pond Factory* smart contract. Enables creation of new lending ponds.
- *Pond* smart contracts. Support deposit & withdrawal operations from its owner, provide loan offers and enable users to apply for loans.
- *Trusted Service Registry* smart contract. Supports verification of risk assessment results.
- *Loan Registry* smart contract. Registers privacy-preserving history of loan repayment commitments, supports issuing of on-chain verifiable credentials.

## SSCR

**SSCR** is a unique global decentralized identity storing various protocol-specific verifiable credentials. The SSCR is owned and managed by the user, and their data is cryptographically encrypted and stored in a secure data store. The SSCR includes a DID and set of verifiable credentials stored in secure encrypted storage.

## Protocol Apps

**Protocol Apps** are custodial or non-custodial web and mobile applications, integrated with the protocol. Include:

- *Borrowing Apps* (Distribution Apps). End-user web or mobile applications for the Borrowers to onboard, collect credentials and apply for loans to the protocol. Such applications can be provided either by an independent last-mile financial service providers in a regulated custodial scenario, or by local communities, or as completely decentralized dApps providing the necessary access to the protocol.
- *Lending Apps* (Liquidity Apps). dApps for lending pool and pond management. Those applications include creation of pools/ponds, depositing and withdrawal of funds, and monitoring utilization and profitability performance.
- *Governance Apps*. dApps for protocol monitoring, changes implementation and fraud prevention.

## Protocol Services

---

The Growr core protocol and applications is integrated with various internal or third-party services, covering mainly risk management functions.

- *Credential issuing services*. Issue verifiable credentials asserting certain facts about the borrower.
- *Credential verification services*. Verify that presented credentials are trusted and valid, and owned by the subject.
- *Credential storage services*. Securely store the credentials and the declarative details, part of borrower's SSCR.
- *Payment services*. Cover various on-ramp, off-ramp services, and fiat settlement services.  
To implement the above services, the protocol utilizes various building blocks from RSK Infrastructure Framework (RIF).

## Use Cases

---

### Microfinance

---

The global microfinance market amounted to \$124B in 2018 ([link](#)). 139.9 million borrowers benefited from the services of microfinance institutions, compared to only 98 million in 2009. Of these 139.9 million borrowers, 80% are women and 65% are rural borrowers. The main regions of microfinance are Latin America with \$48.3B, South Asia with \$36.8B, East Asia and Pacific with \$21.5B, Africa with \$10.3B. Connecting this market to the Growr protocol providing global loan marketplace will bring efficiency in capital allocation, fair conditions, and transparency of the impact.

### Productive micro-lending

---

In the emerging markets, a large segment of the population is still unbanked and more than 50% of the economy is informal. The majority of micro-businesses don't have a bank account and access traditional financial services. They mostly rely on support from their friends and family or they go to loan sharks charging as high as 15-20% per month. Through Growr, unbanked micro-entrepreneurs can publish their project and apply for productive unsecured micro-loans from a global marketplace using their self-sovereign credit record.

## Agriculture microfinance

---

Currently, smallholder farmers have difficulties accessing financing for their activities due to high informality and distance to servicing providers (banks, MFIs). The financing gap is higher in rural areas with agriculture remaining largely underserved. The farmers suffer from loan sharks charging high interest rates, thus not having much left after each season for their long term farm development. Smallholder farmers can access Growr protocol and apply for unsecured micro-loans by forming cooperatives and receiving credentials from regional merchants that source inputs and and wholesale buyers that deliver their production.

## Lending to vulnerable social groups

---

Vulnerable populations such as victims of violence, natural and man-made disasters, as well as micro-merchants from poor communities are a prime beneficiary of the protocol. Such populations can rely on memberships within local associations, who can become both credential providers and funding donors. In addition to lending, donations can also benefit from a global and open protocol such as Growr, giving the donors a complete transparency of the impact of each dollar they give.

## Crowdfunding

---

The crowdfunding business model continues to grow fast globally. In addition to the established platforms for investment in startups and product R&D, impact finance providers such as Kiva are helping micro-businesses with loans for as little as \$25. Crowdfunding transition to the blockchain is a matter of time, as the example of Kick-starter shows ([link](#)).

## Challenges

---

### Regulatory compliance

---

Lending services are regulated everywhere in the world. Crypto lending, in particular services provided by decentralized protocols, has succeeded in achieving regulatory arbitrage. The Growr protocol will aim to strike a balance between covering regulation at the "last mile" of consumer financing depending on the jurisdiction and the locally residing stakeholders through which the protocol services are delivered, and the supranational decentralized space outside of the reach of traditional regulators.

### Credit risk assessment

---

While we plan to leverage verifiable credentials from traditional credit bureaus, we envision a future with more decentralized credit risk assessment based on alternative data sources. This is mostly uncharted territory and may lead to lower yield for investors or even losses due to incorrect calculation of the cost of risk.

### Fraud

---

We expect that such a protocol will be a high-interest target of fraudsters. We will work on developing the right anti-fraud measures including permanent blacklisting of users from accessing the protocol services.

## Technology maturity

---

Some of the technologies described in this whitepaper are new and unproven at such scale. We aim to leverage as much as possible the experience of other projects and to test different aspects of the technology stack via demo applications and pilots.

## User experience

---

Setting up Bitcoin and RSK wallets is still complicated for technically unsophisticated users. As part of the work on the Growr protocol, we will seek the most user-friendly implementations for accessing the protocol and interacting with its smart contracts, including facilitating access through custodial solutions.

## Final Notes

---

### ToDo

---

You are reading Growr protocol documentation in progress, intended to present the high-level design of the protocol for public feedback. It should not be considered complete or final. Future revisions will address incomplete elements and currently unforeseen aspects and issues.

The present Growr documentation version is *0.4.0*.

### Feedback

---

Our goal is to develop Growr as an open source protocol. Lending, and especially *decentralized uncollateralized lending*, is a very complex topic and there are many aspects that are yet to consider. We welcome your input on how to improve the protocol.

Please, submit an issue or pull request at [Growr documentation repo in GitHub](#).

### Contribution

---

Growr protocol is an open-source decentralized project and anyone can permissionlessly contribute to its development. Developing the protocol, the team abide to the following values:

- **Freedom.** Growr ensures equal starting point and free access to the protocol for everyone.
- **Transparency.** Growr provides services with fair conditions, end-to-end transparency in the process and visible impact.
- **Contribution.** Growr promotes open-source, community-driven, and safe environment.
- **Empowerment.** Growr delivers global life-first innovative financial services.

We truly hope that the mission and values we describe inspire teams across the world to join us and help contribute to the protocol.

Join us!



- Growr repos in [GitHub](#)
- Growr [protocol specification](#)
- Growr [official web site](#)
- Growr in Twitter/Discord