PRIVÉ

PRIVATE CREDIT ON BLOCKCHAIN

WHITEPAPER

January 2018

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Disclaimer

This document describes Privé software platform and a planned launch of its token sales. At the time of writing, the Privé software platform is in an early stage of development. Any forward-looking statements contained in this document, as well as statements declaring what Privé platform is or does, constitute descriptions of Privé's business requirements and its desired features; they do not presently assume any particular level of completeness or availability of the same. This document does not constitute investment advice of any kind.

The document includes a description of Privé platform token, as well as a description of the token sales strategy. Please refer to the token sale terms published on www.irresident.io.

All brands, product names, and trademarks of other companies mentioned in this document are used for identification purposes only and are acknowledged as property of the respective company.
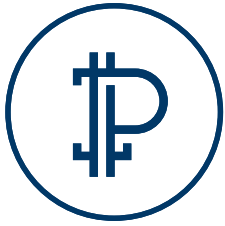
PRIVÉ
Private Credit on Blockchain

Whitepaper v0.0.10

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with the help of Luka Arvaj and Conor Thacker

1   Executive Summary

Privé is a platform that enables decentralized industrial scale loan and credit origination with support for full debt servicing lifecycle. The platform is designed to rely on the Ethereum public blockchain and smart contracts for digital contract execution and exchange of value. Realized use-cases include secured lending with support for digital and off-chain collateral, trade finance, guarantees, debt servicing as well as auctioning off non-performing loans (NPL), and other forms of bad debt. The platform introduces a concept of Asset Backed Liabilities which among others enables for large transactions without the necessity of conversions to and from ETH network currency.
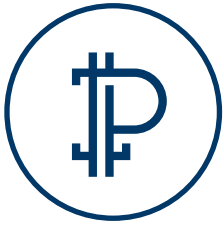
Investors in both the digital and real economy can use the Privé platform to invest in secured loans to entities that typically operate in the real economy. Individuals and small businesses can use Privé as a tool that enables them to leverage new opportunities in loan and credit origination. Financial institutions can benefit from Privé's innovative model to create new income streams, cut cost, distribute risk, and shield themselves from the inefficiencies of conventional models and practices [1].

In order to provide support for legal and regulated entities as well as help legally protect the interests of all parties involved, Privé's smart contracts integrate legal documentation that ensures legal protection within the underlying legal system.

Privé complements the current dominating credit origination models employed by institutions such as banks and private funds. Privé pushes for public Distributed Ledger Technology (DLT) based business model disruption, and offers a decentralized, market-based alternative to the conventional implementation of major use-cases in the financial industry.

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[1] As detailed throughout various use-cases in the Whitepaper

2 Problem Domain

2.1 Context

Commercial banks and debt funds are two primary sources of commercial financing. Loans are originated either directly from lender to borrower, or indirectly through syndication and structured vehicles that sell their cash-flow backed securities to investors. In Europe, commercial banks (depository institutions) are certainly the most common source of secured loans to business entities of all sizes. In the US, debt markets play the major role in corporate financing.

In relation to the blockchain disintermediation paradigm, it is worth noting that conventional lenders are not just mere intermediaries easily replaceable by mechanical operations. Regardless of observable inefficiencies deriving from the regulatory framework, the value provided by the current dominating roles lies in their absorption and distribution of risk.

2.2 An Exclusive Club

Heavy regulatory framework encourages creation and preservation of big and inert oligopolies. A logical consequence of having institutions spend millions on regulatory compliance on a yearly basis is the dual manifestation of expensive services and high barriers of entry for the new comers. This manifestation is supported and further elevated by the current dominant participants. These two components combined may lend themselves to the perception of a credit supply scarcity, even in a world awash with central bank liquidity. Such an environment promotes the charging of hefty fees with no real value in return, while at the same time leaving no room for growth for anyone except the already well-established players.

Until recent groundbreaking innovations in public distributed ledger (blockchain) technology, attractive opportunities for non-financial businesses in the commercial lending sector were virtually nonexistent.
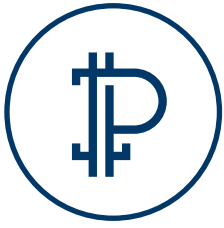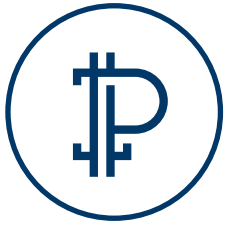
2.3 ZIRP and NIRP Environment

From an investor's perspective, the market is two-sided, with minimal interest rates for depositors and with attractive opportunities reserved primarily for the well-established. As a reminder, it is the real sector (the depositors) who ultimately provide credit to financial institutions, not vice versa.

From a service provider perspective, a relatively low barrier of entry is available only for private placement. This limitation represents an insurmountable obstacle for retail investors, with the most attractive opportunities out of their reach. This is the same group of investors that have been left with trivial interest rates on their deposits, set at the discretion of large banking institutions. Depositors (bail-in) and tax payers (bail-out) bare the sole risk and ultimate expense as a consequence. With the prospect of interest rates rising in the midterm, the depositors are likely to be the last to benefit.

2.4 Elevated Cost of Private Credit

Commercial banks don't bother with the hassle of business particularities and don't share their clients' visions, they simply follow predefined, statistically justified, regulatory rules. Private funds, on the other hand, set their own rules, and can lend to virtually anyone, but there's a catch.

Private funds target volume. High profit expectations in both relative and absolute terms is the name of the game with private funds. Funds customize their deals according to particular project requirements. With IRR targets on equity often exceeding 15%, a credit demand outside the largest and/or most lucrative projects at any specific moment is simply out of their focus. Regulatory framework compliant geo-locality based diversification strategies (e.g. funds of funds) add multiple layers of fees to the equation. Even without other 'risk mitigation' arrangements, such as equity payment in kind, mezzanine debt, etc., private credit can be quite expensive while at the same time covering for just a small portion of the total commercial credit demand.

On the other hand, once interest rates do begin to rise (an event that is expected to occur soon in the United States, followed by the rest of the world) bank credit will not remain as cheap, and the competitiveness in cost of capital will again come into play.
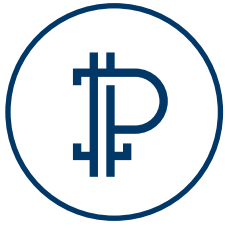
2.5 Hoarding of Bad Loans

Despite playing by relatively strict rules, banks occasionally end up with loans that no longer perform according to schedule. These loans are referred to as non-performing loans (NPL) and the less severe sub-performing loans (SPL). When it's too late to repackage and sell a loan as part of a structured vehicle, banks rely on their provisioning (capital reserves) when taking losses incurred by the sale of their non-performing exposure, or when liquidating the attached collateral.

Difficulties with banks realizing their NPL losses can stem from legal system/regulatory inefficiencies, reputational concerns, clientelism, and even corruption. The fact that banks are allowed to keep NPL at face value on their balance sheets for prolonged periods of time is a matter of concern. Without any market based monitoring mechanism, and with the centralized institutional oversight that permits banks to hide their bad exposure in plain sight, it is conceivable that certain banks, especially in Europe, reach absurd NPL ratios of over 1/3 of their total commercial credit portfolios.

2.6 Value Destruction

The single most important factor influencing steady growth in NPL share within bank portfolios is selling too late. A business with difficulties in servicing its financial debt tends to lose value extremely fast. With little or no money left for Capital Expenditures (CAPEX), the business soon begins losing their competitive edge. When revenues are spent almost exclusively on servicing debt, overdue payments to suppliers and employees may result. Consequently, these employees may begin to leave the company, and suppliers may refuse to deliver agreed services or products, resulting in diminished revenues.
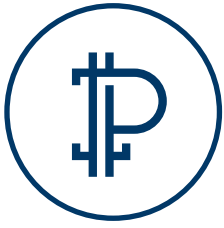
Many factors can contribute to financial distress; including bad investment decisions and loss of market share to new competitors. However, the key factor that causes a distressed company's value destruction is the debtor and its creditors waiting too long before taking action. In the early stages of financial distress, when the value of the borrower's operations substantially exceed bare collateral liquidation value, the lender should seriously consider selling its NPL or SPL. If a business in distress requires fresh capital investment or operational restructuring, it is often beyond the lender's help, even with refinancing or restructuring.

2.7 Credit Rationing

With the conventional banking system funneling cheap credit to big business (often just to boost the P/E ratios via stock buybacks), there is an observable difference between financial conditions enjoyed by big corporate clients and what is available to everybody else. In commercial lending, this phenomenon can be result of the objective complexity in cases that demand a customized, boutique approach, yet are of insufficient size to attract the attention of private funds. On the other hand, banks may find these projects too risky and refuse to lend, regardless of the borrower's willingness to pay higher interest rates.

Without access to competitive credit supply on a global scale, the outlook is unlikely to change. Besides the obvious risk of everyone being on the same side of the trade, current practices can be detrimental to the economic prosperity profoundly rooted in entrepreneurship and small business growth.

3 Objectives

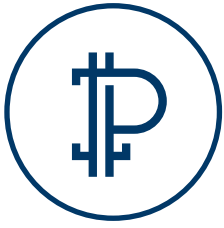## 3.1 Decentralization of Credit Supply

Privé's primary objective is to bring together the best of commercial banking and private funds. This enables borrowers access to favorable market-driven financial conditions, and a customized service of freely competing providers. Privé builds upon decentralized global credit supply, and provides loan arrangement and servicing local to borrowers.

Privé aims to accomplish this goal by enabling capital allocation on public distributed ledger. This is achieved by competing Lenders bridging artificially imposed limitations to accessing credit, meaning that borrowers capable of meeting market driven expectations will have an easier task getting the desired financing.

Privé is indiscriminative with respect to transaction size, meaning it will provide support for, and will be used to effectively supplement use-cases involving loan origination to big corporate clients.

3.2 Competition Driven Cost Effectiveness

The key component to achieve an affordable yet proprietary per case service is cost effectiveness. Inclusion of individual and small business service providers allows for the required specialization at the business model level. This can be attributed to the permissionless and censorship free nature of public blockchain technology.

A number of business roles (or business actors as referred to in this document) in Privé; such as Arranger, Loan Guarantor, and ABL Issuer (see section 5.2 Principal Business Actors), provide inclusion of new and not necessarily regulated market participants. In certain cases even Lender can be a non-financial entity, this varies based upon the specific regulatory framework. Recent advancements in public DLT enable the mechanics required for the legal binding and execution of contracts that are rule compliant. The inclusion of new participants does not impose new risks, instead it enriches the market with new competition, this in turn drives down the costs of service.

Privé offers new opportunities for the competitive many which complement the supply currently provided only by a select few.

3.3 Preservation of Value

In developed markets, Privé can complement existing credit supply and offer a cost-effective alternative to the conventional credit origination. The idea is that once the platform is in production and the process of internationalization has commenced, then the functionalities provided by Privé platform will see their application in the unbanked world.

As for the initial implementation and support for different jurisdictions word wide, as well as the required change management, the idea is to decentralize Privé's internationalization effort. This may be achieved by copyright holders in different jurisdictions, each capable of providing initial support as well as taking on the task of managing subsequent changes in their respective underlying legal systems.

3.4 Disruption through Transition

It is envisioned for Privé to achieve a wide adoption of its decentralized model alternative to conventional lending practices. This cannot happen overnight.

By extending off-chain asset related smart contracts to legal contracts, and having them rely on the underlying legal system, the goal is to have the interest of all parties involved protected off the chain as well. Privé also aims at gaining the confidence and trust of traditional participants, and at achieving widespread acceptance and adoption of the decentralized model alternative during the transition to a world of digital assets.

The reliance on legal protection for dispute resolution is intended as the last resort and is designed as an exception to the rule. Disputes are to be resolved locally and kept contained at the business model level, with interactions limited to business actors (entities) under the given legal system jurisdiction.

3.5 Global Adoption
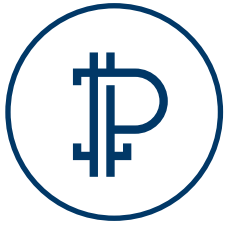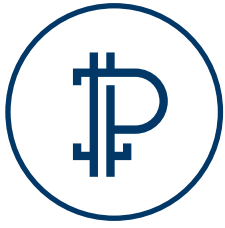
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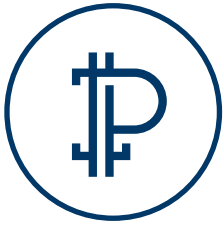
4 Key Principles

4.1 Actionable Model

The Privé model reflects a belief that disruption of established conventional models can be best achieved one actionable step at a time.

In contrast to a purely technological disruption, Privé is based on the premise of an actionable real-world business model disruption. The model relies on the integration of state-of-the-art distributed ledger technology within legal reality for realizing its use-cases to the full potential. The permissionless and censorship free environment implemented by the Ethereum public blockchain is best suited for reducing dependence on conventional financial infrastructure. However, private application and data layers with limited P2P synchronization requirements are better candidates for off the chain implementation.

Privé's approach to disruption is realistic in terms of acknowledging, and bridging, any limitations related to integrating public DLT with the real world. The platform is conceptualized to not depend on any other project finalization, or for the legal systems to adopt blockchain based asset registry solutions. Legal aspects of off-chain interactions are isolated at the business model level and are intended for execution and enforcement within legal system. Legal procedures are encapsulated from the rest of Privé platform through the inclusion of economically incentivized participants. Privé's configuration for legal system compliance, and the resulting applicability thereof, are going to vary depending on specific jurisdiction, meaning the level of disruption of currently prevailing business models will vary accordingly.
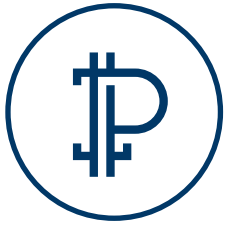
4.2 Support for Complete Debt Lifecycle

Privé addresses all milestones and alternative scenarios within debt lifecycle. From origination of credit, to debt servicing, debt repayment and retirement, optional refinancing, and in the worst case scenario of borrower's default, to exiting the position by auctioning NPL to prospective buyers of distressed debt.

Relieving lenders and their investors from having to deal with loan servicing in a real, locality specific economy, and especially shielding them from workout related activities with non-performing loans, is one of the key benefits of Privé business model. This explains the separation of lending activity into global pooling of capital, and local loan arrangement and servicing.

Support is implemented for alternative scenarios through sales of debt as a whole (i.e. the claims therein.) This ensures a quick, clean, and economically efficient way to deal with the expensive and time consuming effort of debt restructuring and off-chain collateral liquidation. This is done by encapsulating the transfer of claims against debtor and any attached collateral into a single sale transaction. The offer is made to buyers specialized in financial and operational restructuring with a focus on particular borrower's locality market.
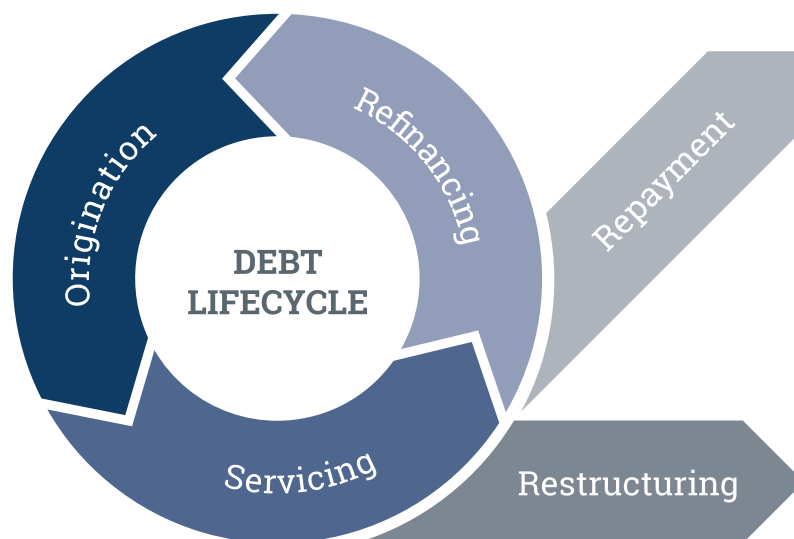
4.3 Reliable Collateralization Mechanisms

Privé promotes the practice of selecting base currency according to borrower's source of income. To consider otherwise would require borrower to hedge against exchange risk[2] or unnecessarily risk default over exchange rate oscillations. With secured debt, the same rule also applies to collateral. It is for these reasons that Privé provides a number of mechanisms that bring collateral denominated in off-chain currencies to blockchain.

Typical activities involving Grantor owned off-chain collateral include having Arranger appraise the assets and attach them to the loan by filing security interest with the relevant legal authority. Privé will provide integrated legal and smart contract support for signing a collateral agreement (or an equivalent thereof) into effect on blockchain. It is worth noting that with off-chain collateral in direct ownership of its Grantor, this procedure remains the only viable solution so long as there is no method for public DLT based smart contracts to reference or trigger changes of otherwise centrally administered records (see XPI concept in section 5.10 External Assets).

In addition to securing debt with off-chain assets in direct Grantor ownership, Privé also provides several mechanisms intended to bridge the gap between the digital and off-chain world. Among these mechanisms are Asset Backed Liabilities (ABL) and Collateralized Binary Guarantees (CBG). The two mechanisms may have considerable impact on primary Privé use-cases, while also available for use by other distributed applications independent of Privé. Besides providing stable collateral, ABL represent a solution for accommodating large fiat transactions that are simply not feasible with conversion to and from a network currency such as ETH.

4.4 Prevention of Collusion and Fraud

Privé's business model emphasizes the benefits of specialization and risk sharing between Arranger / Guarantor (both local to Borrower) and Lender whose legal structure potentially resides on the other side of the world. In order to protect participants from potential collusion of other parties, Privé provides a number of mechanisms that disincentivize fraud.

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[2] Hedging against foreign exchange (FX) risk is a subjet to dealing
  with under future upgrades in this paper
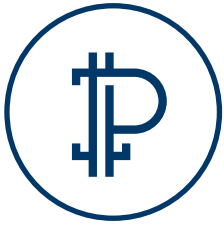
The basis of protecting Lender against Arranger – Borrower collusion is in Lender's ability to sell its claims on open market on the blockchain. In addition, Privé encourages the practice of Arranger risking its own capital by taking the role of a Lender and may also post additional marketable collateral. This helps protect other Lenders against potentially under-collateralized loans. Provisions similar to those relating to CLO equity and subordinated debt tranches are also supported. If so configured, a loan may have Arranger served last in case of Borrower's default and take the loss first. This same logic is applied to Guarantor.

For example; independent of, but in accordance with legal protection, Investors may opt for investing with Lender who configures its Credit Pool to shield them from Lender colluding with its Arranger(s). This is done by having pooled assets (loans) back Investors' exposure with priority over Lender's.

In addition, ABL Issuer can be used instead of direct collateralization to protect against collateral fraud. CBG is another mechanism intended for prevention from otherwise easily verifiable fraud. CBG and ABL are detailed in sections 5.9 and 5.11 respectively.

4.5 Ease of Use

Privé is intended to be an intuitive, end to end, well documented platform. Its reliance on public blockchain for storing shared transaction (verification) data only, and with all private information stored and administered off the chain is intended for optimal execution and cost effectiveness.

With the introduction of ABL Issuer and the issuance of ABL, the end user experience will not be limited to transacting exclusively to and from ETH, but will also include transactions in fiat. Depending on the particular off-chain collateral selection, investors and borrowers unfamiliar with cryptocurrencies will have the option to immerse themselves into the digital world while retaining the perception of fiat transactions.

Initially available only in English, the platform will gradually extend its support for legal documents that back smart contracts with the accompanying support for other languages accordingly.
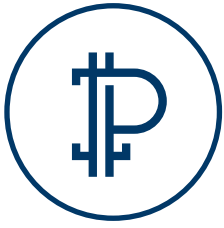
4.6 Show by Example

One way of demonstrating how Privé's model differentiates itself is the issuance of ABL and CBG. Generic projects may opt to delegate the essential entrepreneurial effort to other projects, and in doing so postpone using their mechanisms in the real world, potentially ad infinitum. In contrast, Privé software platform provides the required completeness by realizing end-user primary use-cases that ensure concrete demand for these mechanisms.
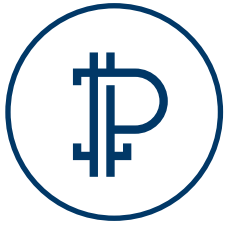
In the long run Privé can be seen as a solution involving realization of a large number of real world use-cases. Privé end users may choose to form partnerships with existing market participants and give life to new enterprises that implement Privé business model components in the real world.

The primary requirement for any prospective partnership may be openness to the change and disruption brought about by public DLT (blockchain) and Privé platform. It is desirable that prospective partners in the early adoption phase include names from the financial industry and the blockchain community.

5 Business Model

5.1 Business Use-Case Model Overview

The extent to which Privé business requirements model is elaborated allows for even the most complex cases of loan origination and debt servicing. To avoid confusing business actors (roles) with individual entities, it is emphasized that more than a single business actor (role) in the model can be, and is often mapped onto, a single entity in a real-world implementation of the model. The in-depth separation of roles is there for a better separation of responsibility and for achieving a higher degree of specialization.

In this regard it is necessary to understand that Privé supports even the simplest use-cases, such as lending from a single lender to a borrower with or without securing the loan on or off the chain.
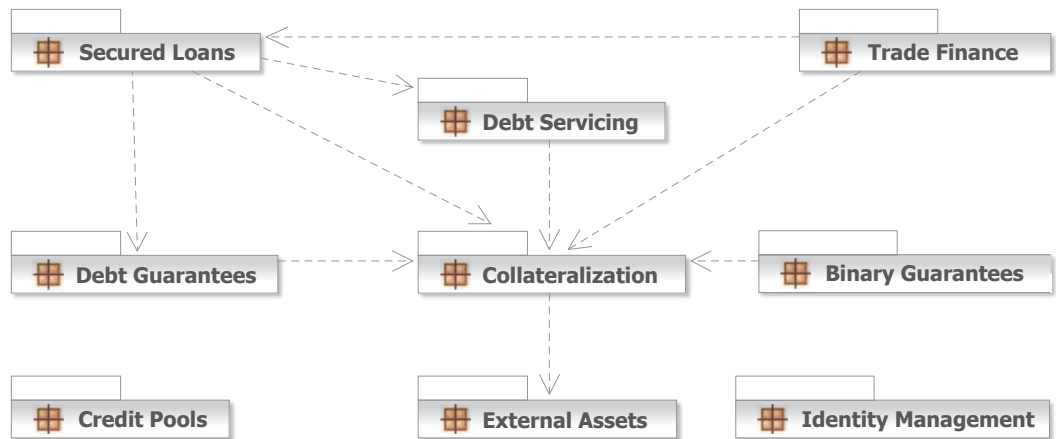
Privé Business Use Case Model (Packages) Overview

5.2 Principal Business Actors (Roles)
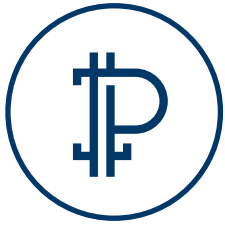
BORROWER

Borrower initiates the loan origination use-case either through contact with Arranger or by listing its demand on the platform.

Borrower can be a legal or a natural person. From a strictly platform specific technical perspective, if a loan is secured with marketable collateral according to Arranger's and Lender's requirements, the Borrower needs not even be identified. However, typically the pledged collateral will be an off-chain asset in Borrower's direct ownership and Borrower will have to be properly identified and authenticated.

LENDER

In Privé, Lender is any investor, natural or legal person, who invests in loan financing. Lender can operate a Credit Pool of investments in which case it manages its own and its Investors' funds.

Lender can also be leveraged, taking loans to finance its own exposure. As with Lender managing its Investors' funds, Leveraged Lender is expected to back the loans it is taking from other Lenders with assets from its own pool at the expense of potentially not delivering upon promise to its Investors (who as per Lender's Credit Pool configuration at the time of committing their funds must be familiar with such leveraged strategy).

In Privé business model, a Lender entity can reside anywhere in the world. It will be Arranger's job to settle legal particularities with Borrower. Lender's job is to assess specific Arranger's trustworthiness, including its past performance.
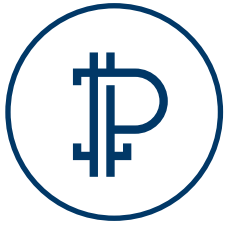
ARRANGER

The pivotal business actor in Privé loan origination model is Arranger. Arranger is responsible for arranging a loan to Borrower on behalf of Lender(s). Deals may involve only a single Lender, in which case the single Lender may also act as Arranger. Arranger is also responsible for assisting Borrower, initially with loan origination, and later with debt servicing. The role of Arranger is optional when lending against marketable collateral.

Depending on specific jurisdiction requirements, Arranger may be a non-financial company, a business adviser / consultant, a regulated adviser, a regulated intermediary, or a regulated lending institution that takes lead role in a loan origination process. The latter being common practice in conventional corporate loan syndication.

Regardless of its particular embodiment, Arranger's principal responsibilities derive from being local to Borrower and in being familiar with Borrower's business. It is completely up to Arranger to choose whether to assume the role of Loan Guarantor, to participate as Lender, or even as Leveraged Lender. This will depend on particular Arranger's business model, the specific regulatory framework, and the deal in itself.

LOAN GUARANTOR

Loan Guarantor is a business actor who in addition to Borrower's collateral, pledges its own via a guarantee agreement. Through this action, Loan Guarantor takes a configurable share of Borrower's risk of default in exchange

for a fee. Depending on the collateral type (marketable, nonmarketable) and on the details of the relative loan agreement, or debt instrument, the guarantee serves as an additional protection against fraud (such as collusion between Arranger and Borrower), as well as against credit risk. However, any attached collateral can be also used to leverage against (such as in the case of marketable collateral), in which case Loan Guarantor assumes a similar, albeit unregulated role to that of Lender or Leveraged Lender.

It is common to expect that entities taking on Arranger's role will also assume the role of Loan Guarantor. By assuming this role, they can prove their stake to Lenders and earn guarantee fees which may correspond to interest rates they would otherwise earn if they themselves were also Lenders.

ABL ISSUER

The primary role of ABL Issuer is similar to that of an asset custodian, with differences regarding legal aspects and the mechanisms involved. ABL Issuer is designed to pledge off-chain assets (including marketable off-chain assets) purchased on Beneficiary's request as collateral for ABL Issuer's debt issued on the public blockchain. ABL may also be in the form of loan agreements, depending on specific jurisdiction.

ABL Issuer is responsible for distributing cashflow from pledged off-chain assets to its creditors (debt holders). A maintenance fee is deducted from the cash flow before passing it over to ABL holders. Unless required otherwise by specific jurisdiction, ABL Issuer can be any type of legal structure that functionally mimics the described open-ended special purpose vehicle.

5.3 Secured Loans

In Privé, a loan can be originated directly from a single Lender or it can be syndicated via a specially purposed pool with more Lenders participating, each with their own collateral requirements (and possibly even different loan conditions)[3]. Each Lender can invest its own capital as well as pool capital from other Investors.

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[3] As a side note, there is a hardly better case of putting smart contracts to use than structured vehicles in finance. Several hundred lines of code may render redundant efforts of an army of lawyers.
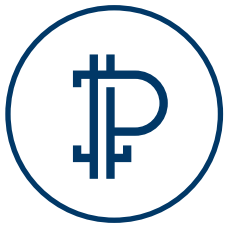
Loans are secured by having Grantors (e.g. Borrower, Guarantor) pledge their collateral via a collateral agreement. Guarantor's collateral may be used in addition to Borrower's. In the case when certain regulatory framework prohibits Arranger from participating as one of the Lenders, even if unregulated, the entity taking Arranger's role can also take the role of Guarantor whose collateral can be secured and borrowed against, especially if marketable.
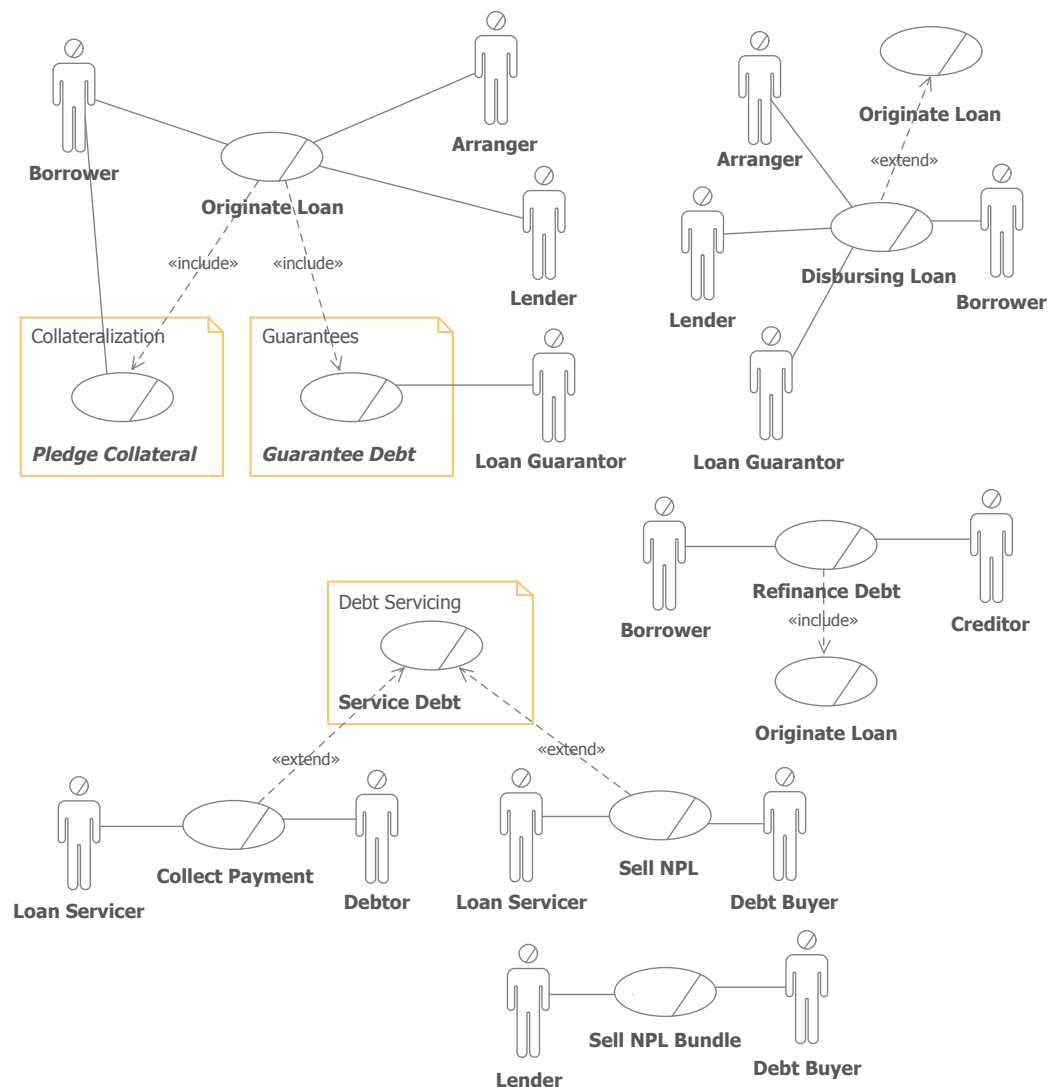
Secured Loans Business Use Cases

Once certain jurisdiction is supported for by Privé, participants should use legal documents accompanying smart contracts where required. Arranger is responsible for assisting Borrower over the process, and when and where applicable, for having security interest filed with legal authorities (when off-chain assets in directed ownership of Borrower or Guarantor are used as collateral). Privé will provide necessary legal procedure guidance for Arrangers with respect to particular legal system.

Loan disbursement may be scheduled as one bulk payment, in more tranches (e.g. project financing), or even postponed until particular conditions are satisfied (e.g. trade financing).

In cases in which a loan is non-performing, Loan servicer may sell it on NPL market or, depending on particular Lender's policy, more NPLs can be bundled and auctioned together.

5.4 Trade Finance

Privé substitutes documentary letter of credit with a public DLT based collateralized guarantee concept that enables for better protection against fraud compared to its conventional counterpart. The mechanism provided in Privé introduces a possibility for stakeholders to customize their deal according to their specific needs, and to protect their interest on each step in the shipping process, whilst complying with UCP 600 requirements. A base case scenario is always straight forward and supportive of smooth transactions, but it may diverge into alternative scenarios should a particular case demand so.

Splitting payment into more installments is supported. Taking a loan against pledged collateral is also supported. For example, if parties agree on having the guaranteed collateral transferred to Seller only upon Buyer's approval of quantity and/or quality of delivered goods, depending on the circumstances, it may cause a substantial liquidity gap on the Seller's part. For this purpose, Privé supports having Seller reuse the attached collateral for taking a loan to improve its liquidity.

The role of Sales Guarantor can be taken by the same entity as that of Buyer, if liquidity is not an issue for the Buyer. However, typically it will take another entity that is in the business of providing guarantees in return for fees.
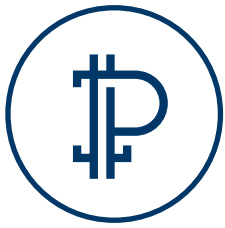
PRIVÉ
PRIVATE CREDIT
ON BLOCKCHAIN

Initially, only payment by transfer of attached collateral is planned for implementation (as a primary payment mechanism in analogy to commercial LC). In the future it may also prove useful providing support for Sales Guarantee as a secondary payment mechanism with payment in fiat, or even another cryptocurrency such as Bitcoin, being the primary mechanism (in analogy to stand-by LC). In such a case, Privé will be competing with large software powerhouses in private DLT arena, where private blockchain is used for clearing only, while settlement is still done via the old-fashioned bank transfers. This kind of strategy, although seemingly another few steps
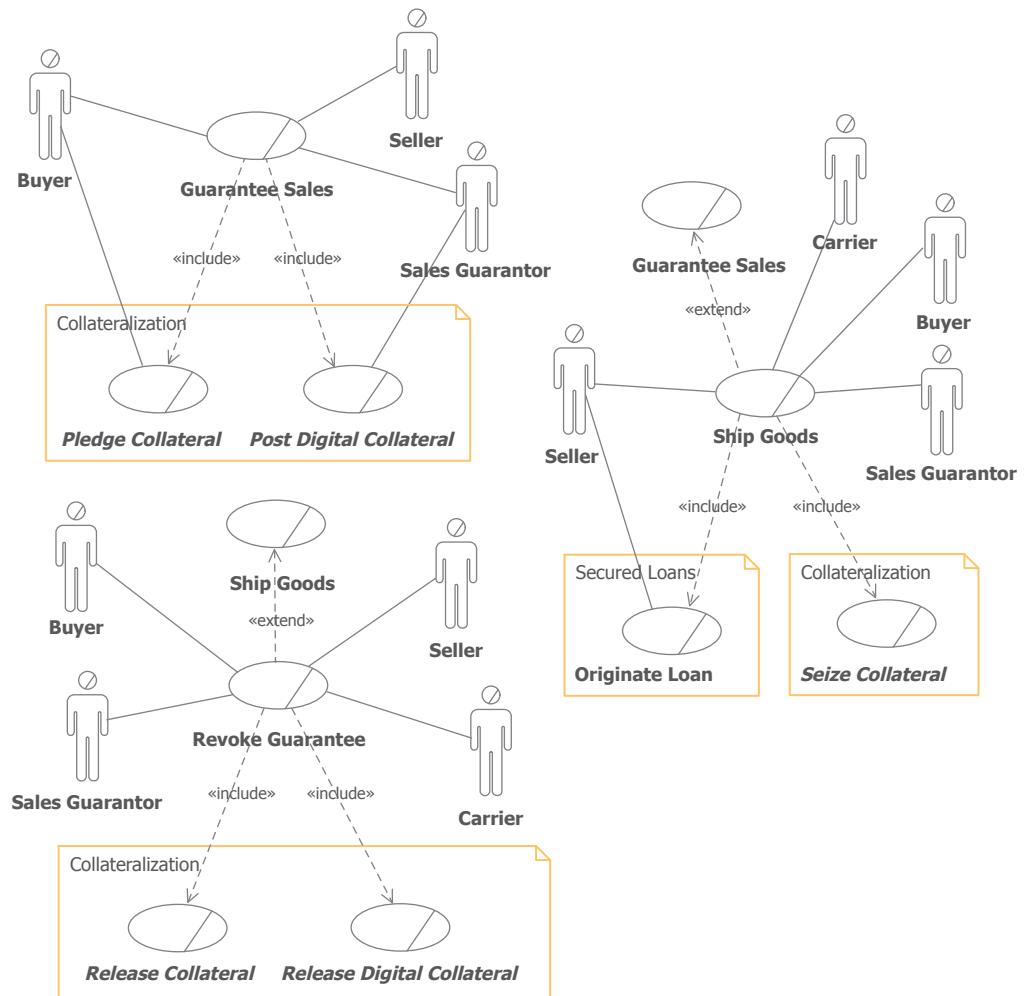
Trade Finance Business Use Cases

away from the purist philosophy, may actually help disrupt the existing models as it aims at taking over a part of the private DLT market through direct competition. For as long as private DLT based solution providers continue to rely on off-chain settlement (i.e. avoid public DLT/blockchain), Privé is going to maintain its competitive advantage in this niche as well.
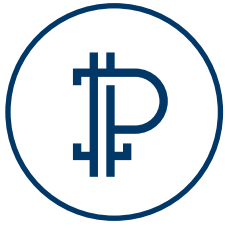
Buyer's and Seller's advisors, roles otherwise taken by banks participating in the conventional model, are not present in the Privé model for several reasons. Firstly, in Privé they are not stakeholders and their service can be conveniently provided by in-house or outsourced staff relative to Buyer and Seller. Secondly, unlike UCP 600 which puts most emphasis on banks' roles in verifying documentation compliance, this is only a precautionary measure in Privé due to the primary focus being on its collateral centric and stakeholder interaction-based model.

5.5 Collateralization

Marketable collateral is collateral that can be sold on the secondary market at fair value under normal market conditions. In Privé, marketable collateral must be also a digital asset that is marketable on blockchain separately from the debt it secures. For using off-chain assets (such as government bonds) as collateral, Privé relies on its External Asset mechanisms (see section 5.10).

The main purpose of marketable collateral is to be transferred to the secured party should condition to do so be verified (e.g. a Borrower's default or margin closeout). Marketable collateral may be used for credit enhancement, as a disincentive against fraud and neglect, as well as an additional safeguard policy with potentially under-collateralized loans. The latter case is perfectly legitimate as Arranger may be in position of exercising a high degree of control over Borrower, in which case it will be Arranger's responsibility to additionally secure the loan to protect Lender from the risk. For this purpose, Arranger can resort to its own marketable collateral or even to another Credit Pool that is in the business of issuing collateralized guarantees.

If the value of marketable collateral goes down but is still above the close-out level, a margin call may be issued to Grantor to give it a chance to post more collateral. It is for this reason that using stable marketable collateral is a better choice than pledging purely digital, highly volatile assets, particularly with long term loans in mind. It is also worth considering cashflow bearing assets, such as government bonds, as they continue to benefit the collateral Grantor over the entire loan term (for as long as the debt is duly serviced). On the other hand, nonmarketable real assets that remain in Borrower's possession remain the most likely option for long term commercial loans.
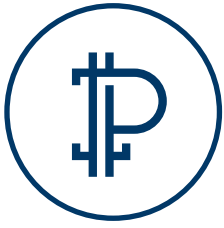
The Privé model is designed with an ever-greater transition to digital assets over time in mind. Besides its own digital asset-based mechanisms, Privé is also open to new digital asset classes that may bring off-chain assets and collateral to public blockchain in a safe and cost-effective manner.

5.6 Debt Servicing

Principal debtor services its debt according to debt repayment schedule as per terms defined in the debt instrument (or agreement). Depending on debt origination, repayment schedule may be a loan amortization schedule or any kind of agreed payment plan.

Again, depending on how debt is originated, debt servicing may include additional alternative scenarios. However, at the generic debt servicing level, Principal debtor's payment being overdue automatically triggers attached marketable collateral liquidation (or transfer) to the secured party according to the attached collateral liquidation schedule. In a case when the seized collateral belongs to Grantor, other than Principal debtor (such as to a Guarantor), the debt paid with collateral is automatically subrogated to the Grantor.

If there is not enough marketable collateral left, Principal debtor payment being overdue is determined as default.

5.7 NPL Market

A non-performing loan is intended for sale in NPL market auctions. NPL is sold as Creditor's claims in Debtor and in the attached collateral, without recourse against Debtor left to the original Creditor, the seller of the loan.
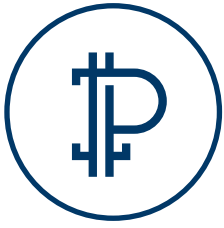
NPL market targets arbitrageurs and end buyers that see their opportunity in acquisition of Lender's claims and exercise control over Debtor's restructuring. It is not uncommon that a prospective buyer demands to purchase claims from more than a single Creditor to gain sufficient leverage over the company. The related takeover process is highly dependent on particular jurisdiction bankruptcy laws and is better off left out of an otherwise mostly automated system. In Privé, a delinquent loan lifecycle ends with the sales to a third party. Since sales of NPL typically involve substantial discounts, the Privé model is designed to rely on blockchain market mechanisms to protect the interest of Arrangers, Lenders and Investors.

Sub-performing loans represent a subset of NPL and can therefore be treated as such and auctioned off in the same manner and with the same end. This is particularly true when Borrower may be an NPL with one Lender and an SPL with another, while a third-party buyer is interested in either buying both non performing exposures or neither of them.

The process of NPL sales involves at least two steps given the time required for prospective buyers to exercise due diligence. Typical distressed debt investors include end buyers from the real economy, distressed asset management funds, private equity funds, investment advisors, and wholesalers of distressed debt. In analogy to other bad debt, NPL are intended for auctioning primarily to prospective buyers and funds that focus on investing and are therefore familiar with Borrower's locality and legal system.

5.8 Guarantees

Collateralized guarantee agreement can be used to provide additional protection to Guarantee Holder (e.g. Lender) against Borrower's default. Guarantees can be secured with marketable and nonmarketable collateral. Having unsecured guarantees is also possible, but just like with unsecured

debt, it only makes sense for reputable real-world entities. In the case of an unsecured Guarantee, or a Guarantee secured with nonmarketable collateral with Guarantor disputing or otherwise not honoring its debt, the holder can sell it on market along with the attached collateral. As per conditions defined within the guarantee agreement, once the holder is reimbursed, the related debt is subrogated to Guarantor, in which case the Guarantor (also) becomes Borrower's Creditor.
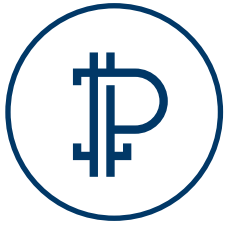
Entity acting as Arranger may also take on the role of Guarantor and guarantee for Borrower's obligations with its collateral. In doing so, Arranger protects Lender from a first loss in case of neglect or fraud.

5.9 Collateralized Binary Guarantee - CBG

CBG is a special form of guarantee agreement customized for protecting the holder in case a certain binary condition (in the real / legal world) guaranteed by Guarantor to be true, proves false. For example, CBG can be used on blockchain instead of title insurance, and to protect the holder against security interest related fraud or neglect. Another aspect regarding CBG is the potential for pledged collateral to be reused.

Using CBG is optional, but it may help cut costs as well as speed up deals in cases with Borrower legally and/or geographically remote to Lender, especially when there is not sufficient trust between Lender and Arranger. Although CBG can be substituted with conventional notary and legal services, it does not exclude reliance on the said services, but provides protection in addition to them instead.

For example, scanned documents proving a filing of Lender's security interest in Borrower's jurisdiction may even be notarized and translated into Lender's language. These documents can still be counterfeits, or not have Lender's security interests perfected. To protect itself from such a scenario without incurring additional legal and travel expenses (eventually chargeable to Borrower), Lender may require a collateralized guarantee that its security interest has been perfected. Particularly with the case of relatively small transactions sensitive to rising costs, CBG provides additional protection against fraud and negligence based on market mechanisms.

CBG demand is auctioned by an obligee (a prospective CBG holder) on blockchain, and the position can be filled by more Guarantors, especially in cases in which a substantial total amount is required.

As with other types of Guarantees and debt in general, if CBG is disputed by Guarantor, or the holder has any misgivings regarding the validity of a guaranteed condition, the holder is free to sell its position in CBG to collateral arbitrageurs legally local to Guarantor who can then take advantage of the opportunity. It's worth noting that with a disputed CBG, the collateral stays attached, along with any future cashflow until the dispute is resolved. Both parties are required to increase their stakes so that the fraudulent party is eventually destined to lose more than its initial stake.

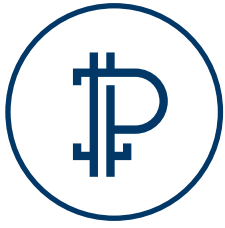CBG may be an ideal use-case for insurers, conventional and digital alike[4].

5.10 External Assets

Privé aims to provide three mechanisms for dealing with assets external to the Ethereum network such as physical assets; real assets; financial assets; and other kinds of assets issued, listed, or recorded on other systems and networks.

Asset Backed Liabilities (ABL) is first of the three mechanisms. ABL are digital assets issued on the blockchain by decentralized intermediaries in charge of safekeeping and/or servicing off-chain assets. ABL is essentially ABL Issuer's debt, backed by the cashflow of an underlying off-chain asset. A key feature of ABL is that they are cashflow bearing and encapsulate all external asset servicing complexities.

The second mechanism is referred to as External Property Interest (XPI). XPI is an unequivocal reference to a property interest; the original record of which resides on a system, or network, external to Ethereum. XPI assumes a complete absence of intermediation, and is based on integrating Privé XPI adapters with heterogeneous external systems (e.g. different DLT networks and other systems). In contrast to ABL, XPI is a 'view' of an external asset 'model'. This view does not require active participation of the 'model' host, but does require for the system to have an interface through which

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[4] Described in more detail under insurance use-cases

the property interest change events may be observed (e.g. an event log). XPI are not cashflow bearing, their best use is for filing and verification of property interests (e.g. a title or a security interest) on centrally administered record keeping systems and networks.
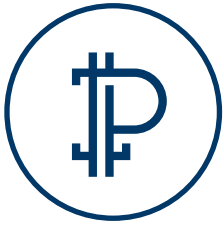
The third mechanism is Decentralized Property Interest (DPI). DPI is a digital asset class mechanism that enables fully digitalized external assets. It is required for the title holder to be in legal control of record keeping and settlement of the property interests. In terms of decentralization, the use of public DLT renders all forms of centralization of land registries and asset registries in general, technically redundant. Under certain jurisdictions, changes to the legal system will be required for full asset digitalization to take place. DPI mechanism is based on an elaboration that is out of the scope of this whitepaper and that proposes a conclusion that assets digitalized under a central authority are not truly digitalized, and are subject to even more 'secure' centralization than they are now.

5.11 Asset Backed Liabilities - ABL

Asset Backed Liabilities can be viewed as cashflow bearing asset entitlement certificates on public DLT. The important difference is that, if secured, ABL provides additional protection against the issuer's default. Banks for deposits, broker-dealers for security entitlements, and unregulated intermediaries for any asset class, may issue their own ABL on the Privé platform.

If the issuer is an unregulated entity, its ABL should be secured with the underlying assets on issuer's balance sheet (ABL should be secured even if the issuer was a regulated entity, but the regulations usually don't permit that). ABL is secured with off-chain assets, ideally with security interest perfected to protect the holder from ABL Issuer reusing ("double spending") collateral off the chain, as well as against other creditors. ABL bears cashflow of assets it is secured with. ABL Issuer's maintenance fee and any taxes (such as withholding tax where applicable) are deducted from the cashflow prior to transmission to ABL holder.

Perfected security interest in ABL collateral ensures seniority over all other ABL Issuer's obligations in case of its default. This means that a holder of
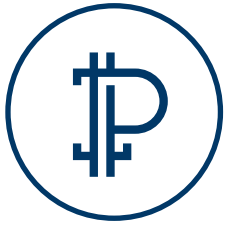
ABL has recourse against the attached collateral, which in case of ABL may be marketable on off-chain secondary markets, and as such subject to sale at fair value under normal market conditions. Just like with other forms of debt in Privé, in the case of ABL Issuer default, instead of dealing with collateral liquidation, ABL can be auctioned off and sold by its holder to arbitrageurs at a price intended close to fair value (arbitrageurs are expected to sell the attached collateral on the respective off-chain market for profit).

Depending on specific jurisdiction, legal prioritization of security interest in ABL collateral over all other issuer's obligations is required for achieving ABL holder's protection. Alternatively, as is the case with US bankruptcy laws, strict restrictions on ABL Issuer (when structured as a special purpose vehicle) activities may be put in place.

In Privé, as well as in other distributed applications that choose to rely on ABL mechanism, ABL may have dual purpose. First and foremost, when secured with marketable off-chain collateral, ABL can be used on blockchain as marketable collateral denominated in stable off-chain currency. ABL represent an ideal collateral class for providing additional protection to Lenders and their Investors by creating a disincentive against fraud and neglect.

Another purpose of ABL is to enable for transactions of scale, even at the current public blockchain capitalization levels. Transactions weighing equivalents of tens of millions of dollars (and that is without accounting for typical multi-billion LBO deals) cannot rely on conversion to and from a network currency such as ETH. Even with employing algorithms that scale in and out of the market, the present liquidity of network currencies is by several orders of magnitude insufficient to support large transactions. ABL Issuer on the other hand can sell its secured debt directly in exchange for fiat, with eventual redemption in either fiat or the attached off-chain asset, and in doing so completely circumvent any blockchain liquidity related problems.

When collateralized with government bonds denominated in their own central bank currency (e.g. US Treasuries in USD or German Bunds in EUR), ABL valuation is expected to be relatively stable over time, reflecting the value of the underlying collateral. Since ABL can be designed for

fractional on-demand transactions, even in very small arbitrary denominations, ABL can also be used to satisfy the always present demand for on-chain stable currencies.

Over time, large institutions may choose to instantiate their own ABL Issuer facilities due to perceived redundancy of the independent suppliers with their own core business. This outcome is more than welcome as it may speed up the introduction of ABL public offerings.
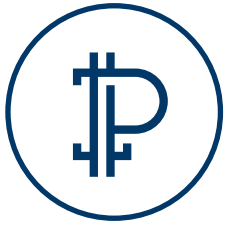
5.12 Credit Pools

A Credit Pool in Privé is a public DLT (Ethereum) based pool of digital assets including loans and guarantees used to secure loans. Credit Pools are not to be confused with pools specially purposed by Arrangers for loan syndication.

Credit Pool configuration is initially planned as managed asset pools, whereby Pool Operator is also its asset manager. In the future, a support for proof of stake based governance may be considered as an additional alternative should there be a demand for such configuration.

Pool Operator is required to configure its Credit Pool completely before accepting any investments. Once the first investment is made, no more changes can be applied to Pool configuration. Among configurable Pool parameters there are performance fee and maintenance fee rates, as well as the rate of Pool Operator's equity exposure to a first loss. This is intended to shield Investors from losses incurred by either Pool Operator's negligence, or its collusion with Borrower / Arranger. Credit Pools are intended to be searchable based on the configuration criteria, as well as their past performance to help Investors make educated decisions.

5.13 Loan Market

Privé is designed to provide tools for auctioning Borrower's demand to Arrangers and individual Lenders on blockchain. The multi-step process of loan arrangement is similar to the conventional loan syndication process, except for being more straight forward due to the unified market structure on blockchain and standardization that is implemented by Privé.

As of writing this, a support for CLO-like structured products is not yet planned for implementation, although it will be considered once Privé's essential functionalities presented in this whitepaper are tested and in production.
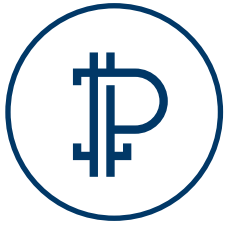
Public DLT overcomes many technical differences between loan and bond markets. Since most differences between the two markets derive from the nature of debt origination, not yet accounting for the concept of a (public) shared ledger, any new 'best practices' and regulations resulting thereof are subject to an entirely new evolutionary process which represents an exciting challenge.

5.14 Insurance

Established insurance companies can benefit from integration of (public) distributed ledger technology with the real economy. Various use-cases based on public blockchain enable global aggregation of capital and co-operation between remote entities. These entities, regardless of whether properly mutually identified, do not necessarily trust each other. With transactions limited to public blockchain eco-system, such lack of trust poses no threat, but with distributed applications such as Privé extending their reach to the real world, that is no longer the case.

Privé intends to provide support for integrating a type of insurance policy issued by insurers on blockchain as a form of eligible collateral for guarantees, such as CBG. If accepted by CBG holder on per case basis, it may be efficiently used to reduce administrative cost of verification of conditions otherwise easily verifiable in the real world. Once implemented, the fees for said guarantees will be even more accessible due to the minimal technical reserves required.

Insurers may not necessarily jump into active participation in this market at first, but over time it may become a new stream of opportunities difficult to ignore, especially with the arbitrageurs intermediating between insurers and the blockchain.
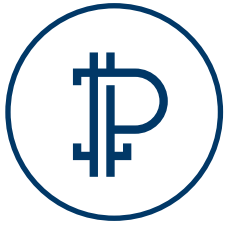
5.15 Revenues and the Distribution thereof

Privé allows for-profit participants (end users) to generate revenue from several sources of income.

With the exception of ABL cashflow, all other income streams are fully optional and freely configurable to any positive number (including 0) by the participating parties. The fee configuration will constitute policies of participating parties, these will be searchable and filterable by other participants.

Privé end users will be charged their license fees in the form of a percentage on all revenues earned by using the software. Privé will distribute royalties to Privé platform copyright holders in proportion to their holdings. The rate, and frequency, of the royalty distribution (taking in consideration its cost in gas) are to be decided upon in the future. One viable option is to enable Privé copyright holders to vote on the royalty rate.

	Type of Revenue	Beneficiary (Role)
1	Interest on debt	Creditor
2	Loan origination fee	Lender
3	Early repayment fee	Creditor
4	Credit pool returns	Investor
5	Entry fee	Pool Operator
6	Exit fee	Pool Operator
7	Maintenance fee	Pool Operator
8	Performance fee	Pool Operator
9	Guarantee fee	Guarantor
10	Net off-chain cashflow	ABL Holder
11	Issuance fee	ABL Issuer
12	Maintenance fee	ABL Issuer

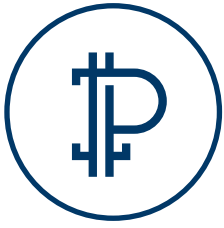Participants' revenues on Privé platform

6 Development Roadmap

WEEK	MILESTONE
0	Pre-Sale Completion
22	Functional (UX) Prototype
44	Architectural Prototype
97	Initial Operational Capacity
110	**Beta Release**
136	**Production Release**
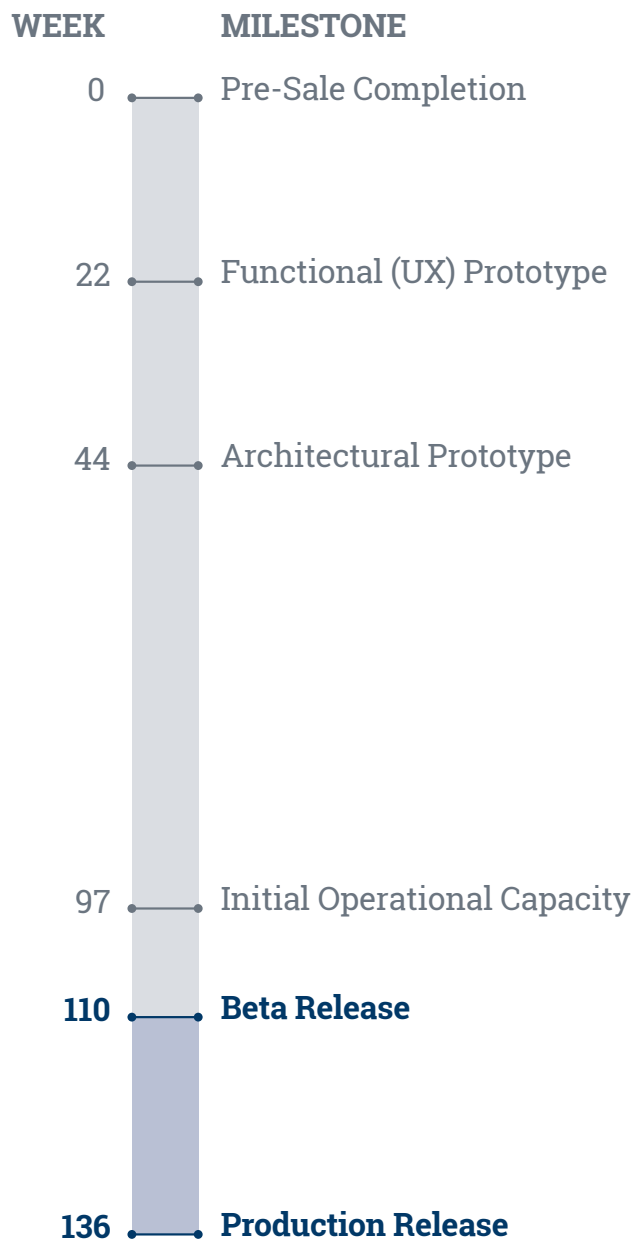
7 Token Sales and I©O

7.1 Privé Token

The Privé model is designed to generate revenue for Privé platform end users, especially the parties who take risk in investing and allocating their capital as detailed in Privé business use-case model (e.g. Investors, Lenders, Arrangers, Guarantors).

Once the platform is in production and the parties using it start generating revenues, the platform's desired behavior is to charge its license fees to its end users and distribute them proportionately to Privé platform copyright (token) holders relative to their holdings. The frequency of distribution is to be decided. The royalties should be denominated in ETH and other digital assets, depending on which medium is used in the exchange of value in given transactions.
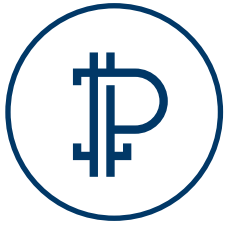
The total issuance of Privé platform copyright tokens is capped at 50,000,000. Their planned distribution is as follows:

	Purpose	Amt of Tokens
1	Token sales	34,000,000
2	Pre-sale	4,000,000
3	Irresident	12,000,000
	Total	**50,000,000**

Privé token distribution table

7.2 Token Sales

Token sales will be capped at 34,000,000 tokens (out of the absolute total amount of 50,000,000 tokens) and will run over a period of 226 days. With the exception of the initial day of token launch (day 0) for which there will be 250,000 tokens allotted for sale, there will be 150,000 tokens allotted for each of the remaining days (day $1 - 225$).

Token price floor is calculated by compounding a rate of 1% of the golden ratio reciprocal by the number of days elapsed since the start of the token sales and multiplying it with the initial token price, as per the formula below:

$$P_n = P_0 \times (1 + 0.01/\varphi)^n$$

with being the number of days elapsed and being the golden ratio number calculated as follows:

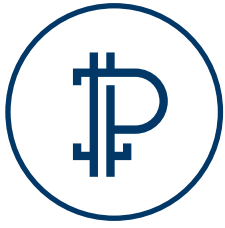$$\varphi^2 - \varphi - 1 = 0 : \varphi = \frac{1+\sqrt{5}}{2} : \varphi = 1.61803..$$

Given the initial token price of $1.00 USD, the token price floor curve progression is shown in the following table and the accompanying chart.

Day	Token price
0	$1.0000
1	$1.0062
2	$1.0124
..	...
224	$3.9754
225	$4.0000
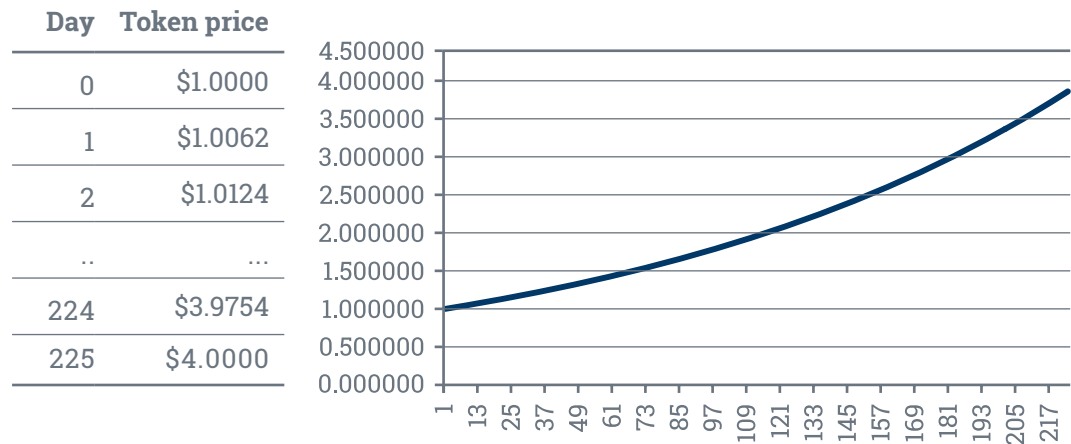
Privé token price floor curve over token sales period

The sales strategy relies on economic incentive for early token buyers. To ensure that there is never shortage of Privé tokens, until either the time limit or the capped amount is reached, a market-based pricing mechanism is added on top of the floor pricing curve.

When sold out, token allotments will make room for sales of tokens otherwise allotted in the future at rates calculated relative to the respective distance in number of days squared and added to the otherwise current allotment rate instead of the initial price. This feature will cause rates to temporarily detach from the floor curve each time the total of tokens sold
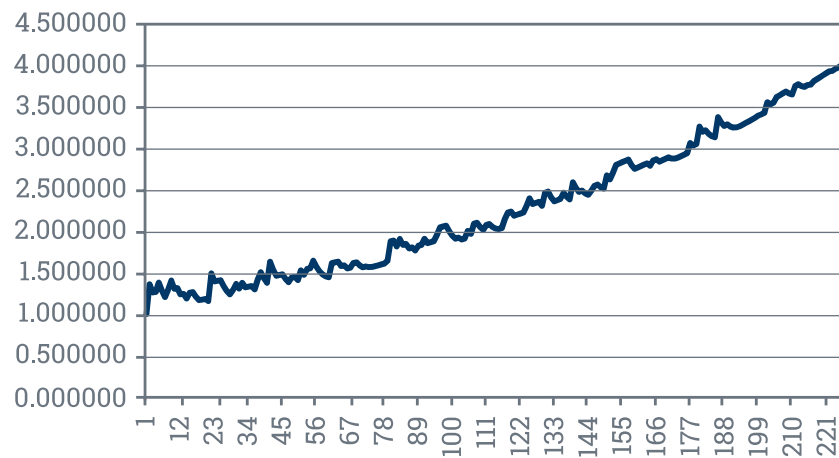
exceeds the total allotment on the day of purchase and maybe even spike on high volume. However, given the exponential rise relative to excess sales by allotment multiples, it is expected that such spikes will be short lived and followed by reversals to the mean (the price floor curve) as shown in the chart below.
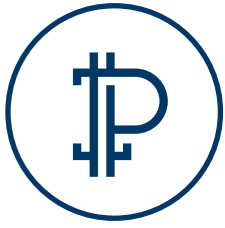

A hypothetical Privé price curve over token sales period

A reversal to the mean is simply a result of lesser demand than the total allotted supply, including the excess supply already sold. It's important to emphasize that individual purchase orders that span over allotment multiples will fill multiple price levels as per the algorithm logic described earlier.

For illustration, below is a hypothetical example of how the tokens will be priced in a scenario of five orders, for simplicity reduced to just one transaction per each of the initial five days of sales.

Day	Allotted	Price floor	Volume	Start Price	End Price	Avg. Price
0	250,000	1.000000	250,000	1.000000	1.000000	1.000000
1	150,000	1.006180	1,200,000	1.006180	1.358613	1.182396
2	150,000	1.012399	50,000	1.358613	1.260730	1.309671
3	150,000	1.018656	40,000	1.260730	1.185185	1.222958
4	150,000	1.024951	30,000	1.185185	1.128555	1.156870

A hypothetical Privé token sales scenario over the initial 5 days

At the time being, the future of excess ETH resulting from sales of tokens above the floor curve rates is not defined, however, adding to maintaining liquidity of Privé tokens once they are listed on exchanges is definitely an option.

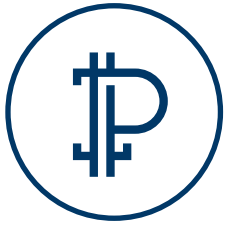The start of token sales will be announced on: www.irresident.io.

7.3 Pre-Sale

Privé copyright tokens will be sold at 30% off the initial token price for the entire amount of 4,000,000 tokens intended for pre-sale.

8 Notes

8.1 Work in Progress

At the time of writing, this whitepaper is a work in progress and therefore subject to change without prior notice.

9 Glossary

BUSINESS ACTOR
Business Actor is a role of participant external to the modeled business that maintains interactions with the business.

BUSINESS USE-CASE
Business Use-Case is a case of interaction between one or more Business Actors and the modeled business. Business Use-Case generates measurable value for its participants and/or the business itself.

DLT
Distributed Ledger Technology

FX
Foreign currency exchange

LBO
[Corporate] Leveraged buyout is acquisition of a company partially with a loan secured by cashflow of the company being acquired.

LC
Letter of Credit is instrument used for substituting a Buyer's credit with that of a bank in order ensure payment to Seller and facilitate trade.

NPL
Non-Performing Loan(s) the servicing of which is long overdue and is very unlikely to be repaid.

SPL
Sub Performing Loan(s) that is still being serviced but with late and/or insufficient payment of interest and/or principal

UML
Unified Modeling Language is a visual modeling language originally developed by Rational Software Corporation and its founders and later supported by IBM after acquiring Rational Software.
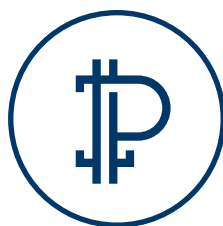
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