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Our Ref : LIT/MIS/ZY/7738/20/RT(ZY) Date : 21 October 2020

Farmland Core LTD,

Bowgun & Cedar Limited

Dear Sirs,

RE: HONG KONG LEGAL OPINION IN RELATION TO A PROPOSED OFFERING OF DIGITAL TOKENS ISSUED BY FARMLAND COR

1. Background

1.1. We are instructed to give advice regarding a proposed offering of digital tokens (collectively, *FARs* or the *Tokens*) by Farmland Core LTD, a public company limited by guarantee incorporated under the laws of Singapore (the *Farmland*) on a cryptocurrency exchange (the *Proposed Offering*).

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- 1.2. Unless the context requires otherwise, references herein to *Schedules* are to the Schedules to this opinion.
- 1.3. We are duly qualified to practise law in Hong Kong and such qualification has not been revoked, suspended, restricted or limited in any manner whatsoever. Accordingly, we are duly qualified to issue this opinion.

2. Documents examined

- 2.1. In rendering this opinion, we have only examined copies of the documents set out in Schedule 1 (collectively, the *Opinion Documents*).
- 2.2. With respect to matters of fact material to this opinion, we have relied on the information contained in the Opinion Documents, and have not made any enquiries or investigation in connection with such matters.

3. Assumptions and qualifications

- 3.1. This opinion is given on the basis of the assumptions set out in Schedule 2 and is subject to the qualifications set out in Schedule 3 and to any other matters not disclosed to us. Our opinion in this opinion is strictly limited to the matters stated in paragraph 4 of this opinion and does not extend to any other matters.

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4. Opinion

4.1. On the basis of, and subject to, the foregoing and the matters set out in paragraph 5 of this opinion and any matters not disclosed to us, and having regard to such considerations of Hong Kong law in force as at the date of this opinion as we consider relevant, we are of the opinion that FARs (when issued in accordance with the information set forth in the Opinion Documents) are not units in a “*collective investment scheme*” or other “*securities*”, each such term as defined under the Securities and Futures Ordinance (Chapter 571 of Hong Kong) (the *SFO*).

5. Scope of opinion, and observations

5.1. This opinion is confined to the laws of Hong Kong of general application as at the date of this opinion and as currently applied by the Hong Kong courts, and is given on the basis that it will be governed by and construed in accordance with the laws of Hong Kong.

5.2. We express no opinion with respect to the laws of any other jurisdiction. Insofar as any law other than the laws of Hong Kong may be relevant to this opinion, we have taken no account of, and have made no investigation of, such law and have assumed that no such law would affect this opinion.

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- 5.3. Except as otherwise stated in paragraph 4 of this opinion, we express no opinion on matters of fact.
- 5.4. We express no opinion on tax matters and in particular, express no opinion on tax matters affecting the Proposed Offering, including (without limitation) any applicable withholding tax, goods and services tax, tax relief or tax exemption with respect to the Proposed Offering or FARs.
- 5.5. By giving this opinion, we do not assume any obligation to notify you of changes in law from the date of this opinion which may affect our opinion expressed in this opinion, or otherwise to update this opinion in any respect.
- 5.6. Our opinion in this opinion is not to be construed as extending by implication to any other matter or document in connection with, or referred to, in the Opinion Documents.
- 5.7. We should also like to make the following observations:
- 5.8. At present, cryptocurrency is not regulated by Hong Kong laws unless it falls into the ambit of securities and/or futures contracts.

Customs and Excise Department of the Government of the HSKAR

- (a) The Money Service Supervision Bureau of the Customs and Excise Department confirmed that Bitcoin and other similar virtual commodities are not money for the purposes of the Anti-Money Laundering Ordinance, and are thus outside the scope of its regulatory regime for money service operators.

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Hong Kong Monetary Authority

- (b) The Hong Kong Monetary Authority also does not regulate virtual assets such as Bitcoin which it regards as a virtual commodity and not as legal tender, a means of payment or money. Therefore, the Hong Kong's banking laws and regulations do not apply to entities accepting or dealing in virtual assets.

Securities and Futures Commission ("SFC")

- (c) As seen in above, there is no cryptocurrency-specific regulation in Hong Kong. Cryptocurrencies and digital tokens have been categorised by the SFC as a virtual commodity or virtual asset, which is not a specifically regulated instrument. However, depending on their structure, terms and features, such cryptocurrencies or digital tokens may be considered a regulated instrument.

- (d) Under existing regulatory remits in Hong Kong, markets for virtual assets may not be subject to the oversight of the SFC if the virtual assets involved fall outside the legal definition of "securities" or "futures contracts" (or equivalent financial instruments). Where virtual assets fall under the definition of "securities" or "futures contracts", these products and related activities may fall within the SFC's ambit. Where the digital tokens involved in an Initial Coin Offerings fall under the definition of "securities", dealing in or advising on such digital tokens, or managing or marketing a fund investing in them, may constitute a regulated activity. Parties engaging in a regulated activity targeting the Hong Kong public

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are required to be licensed by or registered with the SFC, irrespective of where they are located.

- (e) Pursuant to a statement by the SFC on 1 November 2018, there is now an expanded scope of regulated activities by the SFC. Notwithstanding the above, if firms are engaged in the distribution of funds which invest in virtual assets, irrespective of whether these assets constitute "securities" or "futures contracts", these firms are required to be licensed by or registered with the SFC.

Securities

- (f) Securities has a broad definition under section 1 of Schedule 1 of the Securities and Futures Ordinance Cap. 571 ("the SFO") if the coins constitute "securities", as follows:-
- "(a) shares, stocks, debentures, loan stocks, funds, bonds or notes of, or issued by, a body, whether incorporated or unincorporated, or a government or municipal government authority;
- (b) rights, options or interests (whether described as units or otherwise) in, or in respect of, such shares, stocks, debentures, loan stocks, funds, bonds or notes;
- (c) certificates of interest or participation in, temporary or interim certificates for, receipts for, or warrants to subscribe for or purchase, such shares, stocks,

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debentures, loan stocks, funds, bonds or notes;

(d) interests in any collective investment scheme;

(e) interests, rights or property, whether in the form of an instrument or otherwise, commonly known as securities;

(f) interests, rights or property which is interests, rights or property, or is of a class or description of interests, rights or property, prescribed by notice under section 392 of this Ordinance as being regarded as securities in accordance with the terms of the notice;

(g) a structured product that does not come within any of paragraphs (a) to (f) but in respect of which the issue of any advertisement, invitation or document that is or contains an invitation to the public to do any act referred to in section 103(1)(a) of this Ordinance is authorized, or required to be authorized, under section 105(1) of this Ordinance,

but does not include—

(i) shares or debentures of a company that is a private company within the meaning of section 11 of the Companies Ordinance (Cap. 622);

(ii) any interest in any collective investment scheme that is—

(A) a registered scheme as defined in section 2(1) of the Mandatory Provident Fund Schemes Ordinance (Cap. 485), or its constituent fund as defined in section 2 of the Mandatory Provident Fund Schemes (General) Regulation

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(Cap. 485 sub. leg. A);

(B) an occupational retirement scheme as defined in section 2(1) of the Occupational Retirement Schemes Ordinance (Cap. 426); or

(C) a contract of insurance in relation to any class of insurance business specified in Schedule 1 to the Insurance Ordinance (Cap. 41);

(iii) any interest arising under a general partnership agreement or proposed general partnership agreement unless the agreement or proposed agreement relates to an undertaking, scheme, enterprise or investment contract promoted by or on behalf of a person whose ordinary business is or includes the promotion of similar undertakings, schemes, enterprises or investment contracts (whether or not that person is, or is to become, a party to the agreement or proposed agreement);

(iv) any negotiable receipt or other negotiable certificate or document evidencing the deposit of a sum of money, or any rights or interest arising under the receipt, certificate or document;

(v) any bill of exchange within the meaning of section 3 of the Bills of Exchange Ordinance (Cap. 19) and any promissory note within the meaning of section 89 of that Ordinance;

(vi) any debenture that specifically provides that it is not negotiable or transferable (excluding a debenture that is a structured product in respect of which the issue of any advertisement, invitation or document that is or contains an invitation to the public to do any act referred to in section 103(1)(a) of this Ordinance is

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authorized, or required to be authorized, under section 105(1) of this Ordinance);

(vii) interests, rights or property which is interests, rights or property, or is of a class or description of interests, rights or property, prescribed by notice under section 392 of this Ordinance as not being regarded as securities in accordance with the terms of the notice.”

- (g) Nonetheless, it is still unclear which virtual assets will qualify as “securities”. Adopting the definitions hereinabove, to be a security, a virtual asset would need to have the features of shares, debentures, a collective investment scheme, structured product or regulated investment agreement.
- (h) On 5 September 2017, the SFC issued a statement on Initial Coin Offerings (“ICO”) which provides that while digital tokens offered in typical ICOs are usually characterized as “virtual commodity”, depending on the facts and circumstances of an ICO, digital tokens that are offered or sold may be “securities” as defined in the SFO, and subject to the securities laws of Hong Kong (“the SFC Statement”)
- (i) The SFC Statement outlines 3 scenarios in which digital coins might constitute “securities”, namely where the coins could be regarded as shares, debentures or interests in a collective investment scheme (“CIS”).

Shares

- (j) According to the SFC Statement, digital tokens or coins offered in an ICO may be

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regarded as “shares” where they represent equity or ownership interests in a corporation, for example where coin holders are given shareholders’ rights, such as the right to receive dividends and the right to participate in the distribution of the corporation’s surplus assets upon winding up.

- (k) Referring to the SFC’s Statement on initial coin offerings dated 5 September 2017, where digital tokens offered in an ICO represent equity or ownership interests in a corporation, such as right to receive dividends and right to participate in the distribution of corporation’s surplus assets upon winding up, the tokens may be regarded as shares; and therefore “securities”.

Debentures

- (l) Where digital coins are used to create or acknowledge a debt or liability owed by the coin issuer, the SFC may regard them as “debentures”, for example where an issuer may repay coin holders the principal of their investment on a fixed date or upon redemption, with interest paid to holders.
- (m) A digital token may be regarded as security token is where an issuer may repay token holders the principal of their investment on a fixed date or upon redemption, with interest paid to token holders. This may be considered as debenture, therefore falling into the definition of “securities”.

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Interest in a collective investment scheme (“the CIS”)

- (n) Up until present, there have been no court decisions on the meaning of “collective investment scheme” in Hong Kong. Therefore, whether an ICO falls within the definition of CIS will depend on the facts and circumstances of the ICO and ultimately, the courts’ interpretation of the statutory definition.

- (o) The SFC’s guidance indicates that the essential features of a CIS are:
 - i. it must involve an arrangement in respect of property (property is broadly defined);
 - ii. participants do not have day-to-day control over the management of the property (even if they have the right to be consulted or to give directions about the management of the property);
 - iii. the property is managed as a whole by or on behalf of the person operating the arrangements, and/or the participants’ contributions and the profits or income are pooled; and
 - iv. the purpose or effect (or pretended purpose or effect) of the arrangement is to provide participants with profits, income or other returns from the acquisition or management of the property.

- (p) When proceeds of token are managed collectively by the ICO scheme operator to invest in projects with an aim to enable token holder to participate in a share of the

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returns provided by the project. This may be regarded as an interest in a collective investment scheme; and therefore “securities”.

- (q) Based on the various statements published by the SFC, SFC has stopped one ICO, that of Black Cell Technology Limited (Black Cell), from being publicly offered in Hong Kong. According to the SFC’s press release of 19 March 2018, the SFC considered that the Black Cell ICO may constitute a CIS since funds raised in the ICO were to be used to fund the development of a mobile application and holders of the tokens would be eligible to redeem equity shares of Black Cell.

Structure products and regulated investment agreements

- (r) Further, digital coins issued in an ICO might constitute structured products or regulated investment agreements, both of which are “securities” for the purposes of the SFO.
- (s) Refer to Section 1A of Schedule 1 of SFO, structured product is broadly defined and includes the following:-
- i. Any product where all or part of the return or amount due (or both) or the settlement method is determined by reference to any one or more of:
 - ii. changes in the price, value or level (or within a range) of securities, commodities, indices, property, interest rates, currency exchange rates or futures contracts, or any combination or basket of any of these;

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- iii. the occurrence or non-occurrence of any specified event(s) other than an event relating only to the issuer and/or the guarantor of the product; or
 - iv. A regulated investment agreement which is an agreement, the purpose or effect (or pretended purpose or effect) of which is to provide to any party to the agreement a profit, income or other return calculated by reference to changes in the value of any property (e.g. equity linked deposits) (but does not include a collective investment scheme).
- (t) In summary, the regulatory position in Hong Kong regarding “virtual assets” including cryptocurrencies such as Bitcoin and Initial Coin Offerings tokens is that these are unregulated, unless they constitute securities. In such case, intermediaries conducting regulated activities in relation to virtual assets that are securities, will need to be licensed or registered by SFC and must comply with Anti- Money Laundering and Counter- Terrorist Financing requirements.

6. Offerings of FARs

- (u) Based on further instructions from client, FAR is offered to users in 2 ways, namely:-
- i. Private placement issued by Farmland Core; and
 - ii. Farming.

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Private Placement

- (v) One way for users to obtain FAR is from private placement, to be issued by Farmland Core. Under this private placement, users can exchange and obtain FAR with other digital tokens.

Farming

- (w) Another way for users to obtain FAR is by farming, however, only a fixed small number of FAR can be obtained by farming.

7. Features of FARs

- (x) We are instructed that FAR gives its holder the voting rights to make decision on the following matters in the Farmland Protocol, this is also supported by p. 16 of Farmland Protocol Whitepaper v0.3 or p. 12 of Farmland Protocol 中文白皮書 v0.2 (being the Chinese version of Farmland Protocol v0.3):-
- i. To set up a new farming pool and select the appropriate farming protocol (設立新的挖礦礦池並選擇合適的挖礦協議) ;
 - ii. To update address of oracle (更新預言機地址);
 - iii. To revise profit ratios (更改收益後端抽成比例);
 - iv. To create new Decentralised Autonomous Organisation Community (設立

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新的DAO Community); and

- v. To change the liquidation threshold, Loan-to-Value ratio, rewards, and liquidation bonus. (更改清算門檻，LTV，清算獎金，每個池的封閉系數).
- (y) Further, users may pay premium of insurance on Farmland with FAR (p.15 of Farmland Protocol Whitepaper v0.3 or p. 12 of Farmland Protocol 中文白皮書 v.0.2), the insurance is for users to be protected from dangerous pools. Apart from FAR, users may pay premium with stablecoins and ETH as well.

8. Purpose of FAR

- (z) In view of the features of the FAR hereinabove, the purpose of FAR is to give holders the voting rights to maintain and manage the Farmland Protocol.

9. Analysis

- (aa) Based on the assumptions listed in Schedule 2 of this Opinion and the relevant extracts in Schedule 1 only, subject to further instructions, our opinion is as follows.
- (bb) Unlike the other cryptocurrencies, FAR does not involve issuance of digital tokens by ICOs or CISs, which is to raise funds. FAR is obtained through exchange of other cryptocurrencies and farming with the use of other digital tokens only. This effectively avoids the possibility of FAR representing any ownership and/or economic rights of the issuer, and more importantly, this also avoids the likelihood of FAR constitutes as interests in a CIS as seen in the Black Cell case hereinabove,

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since there is no money raised from a token offering to begin with.

- (cc) Further, based on the functions of FAR hereinabove, it appears that FAR gives voting rights to its holders to maintain the Farmland Protocol; and does not have any securities element, such as ownership of assets or economic rights. Under this circumstance, it is highly likely for FAR to be held as a utility token, which is not regulated by the SFC.
- (dd) Also, although FAR may be used to pay premium for insurance on Farmland for users to receive protection from dangerous pools, there is no evidence at present that it has any elements of securities, therefore, this does not fall into the definition of securities as in paragraphs (i) to (t) as discussed hereinabove.
- (ee) In view of the above, we opine that it is highly unlikely for FARs to fall into the definition of "securities".

10. Benefit of this opinion

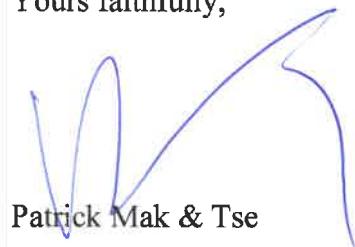
This opinion is given for the sole benefit of the addressee of this opinion and may be relied upon only by the addressee of this opinion in connection with the Proposed Offering. Save where disclosure of this opinion is required by applicable law or court order and prior written notification of such disclosure is given to us, neither the contents nor existence of this opinion may be disclosed to any other person or relied upon by any other person, or quoted or referred to in any public document or filed with any governmental, regulatory, judicial or public authority or body or any stock or other exchange or any other person, or used for any other purpose, without our prior written

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consent first being obtained in each case. Patrick Mak & Tse owes no duty or liability to any person other than the addressee of this opinion.

Yours faithfully,

A handwritten signature in blue ink, appearing to read "Patrick Mak & Tse".

RT/ZY

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Schedule 1

Opinion Documents

The Farmland Protocol Whitepaper v0.2 & v0.3 received by us on 7 October 2020, a copy of which is appended as Annex A to this opinion.

Key excerpts of the Farmland Protocol Whitepaper v0.3 (“the Whitepaper”)

For informational purposes only, reproduced below are the key excerpts of the Whitepaper relating to FARs (**emphasis ours**): -

At page 15 –

“Insurance

...

Premium and compensation fund pool: Users will be capable of purchasing a corresponding quantity of insurance based on their principal amount, and premiums will be paid in stablecoins, ETH, or Farmland governance tokens. A small amount (not more than 10%) of this part of the premium might be transformed into Farmland governance tokens and demolished. The remaining amount will turn into the repayment fund pool.”

At page 16 -

“III. Governance

The farmland Protocol will be launched online after initial testing and implements. Moreover, Farmland’s governance will completely enter the DAO stage after the initial centralization and

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selection of appropriate farming pools. The agreement is subject to FAR, and any enhancements will be decided by FAR holders' votes. Some of the powers that can be regulated by the governance system are listed as follows:

- Set up a new farming pool and select the appropriate farming protocol.
- Update the oracle address.
- Change the income back-end proportionally.
- Set up a new DAO community.
- Change the liquidation threshold, LTV, liquidation bonus, etc.”

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Schedule 2

Assumptions

We have with your consent and without any further enquiry assumed:

- (a) that Farmland Core is validly incorporated and existing under the laws of its incorporation;
- (b) in connection with the Proposed Offering, that there will not be any public offering of the Tokens in Hong Kong and that the Tokens will be entirely placed on a private placement, such as “professional investors” (as defined under the SFO);
- (c) that all consents, licences, permits, approvals, authorisations, exemptions or orders necessary under any applicable laws whether in or outside Hong Kong for the operations and activities of the Farmland Core (the *Platform*) as well as the applications developed or to be developed by the Farmland team, such as Farmland Protocol (collectively, the *Applications*) have been or will be duly obtained within the time periods prescribed under all applicable laws, and any conditions to which they are subject have been or will be satisfied;
- (d) that the responsible persons (including, without limitation, the Farmland Core) with respect to the Tokens, the Platform and/or the Applications (collectively, the *Relevant Parties*) have complied and will continue to comply with all applicable anti-terrorism, anti-corruption and anti-money laundering laws, regulations, directives, notices or guidelines, and that there is nothing in any transaction or associated activity contemplated under or connected with the Opinion Documents or the Relevant Documents (as defined below) that is inconsistent with all such laws,

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- regulations, directives, notices or guidelines;
- (e) the lawful capacity, power and authority of the Relevant Parties to issue or publish the Opinion Documents and to execute any *other* documents relating to the offer or sale of the Tokens, their listing on a cryptocurrency exchange or pertaining to the development and usage of the Platform and the Applications (collectively, the ***Relevant Documents***);
- (f) that the Relevant Documents as executed or to be executed by the respective parties thereto, constitute or will constitute legal, valid, binding and enforceable obligations of all parties thereto under all applicable laws;
- (g) the conformity to originals of the Opinion Documents supplied to us as copies or facsimile copies;
- (h) that, where any of the Opinion Documents has been examined by us in draft or specimen form, it will be or has been executed or published in the form of that draft or specimen;
- (i) that where the Whitepaper has or will be translated into a language other than English, the English language version shall prevail in the event of conflict or ambiguity between the English language version and the translated version(s);
- (j) that all information and factual statements contained in the Opinion Documents are true, complete and up-to-date;

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- (k) other than our opinion in this opinion as to whether the Tokens *themselves* constitute “securities” under Hong Kong law, that the Platform, the Applications and the other activities (both actual and proposed) of the Relevant Parties in Hong Kong are not, and will not be, subject to any special legislation or regulatory controls in Hong Kong. Without prejudice to the generality of the foregoing, we have assumed that: (i) none of the Relevant Parties are carrying out a “regulated activity” as defined under the SFO; and (ii) none of the Relevant Parties are directly or indirectly, alone or together with any person, holding stored value in any “stored value facilities” (as defined under the Payment Systems and Stored Value Facilities Ordinance);

- (l) that the Whitepaper or any offer documents with respect to the Tokens will not be distributed or otherwise disseminated in any jurisdiction where the offering of products of a similar nature to the Tokens is regulated, restricted, or prohibited;

- (m) that the directors or equivalent persons of each of the Relevant Parties, in authorising the issuance, publication or execution of the Opinion Documents and/or the Relevant Documents have exercised or shall exercise their powers in accordance with their duties under all applicable laws and their respective constitutional documents;

- (n) that there are no provisions of law of any jurisdiction which will be contravened by the issuance, publication, execution or delivery of the Opinion Documents or the Relevant Documents;

- (o) that the Relevant Documents have been or shall be entered into for bona fide commercial reasons and on arm’s length terms by each of the parties thereto and it is in the best interests and

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to the benefit of each party to enter into the Relevant Documents;

- (p) that all registrations, lodgements or filing requirements of any governmental or other authority or agency whether in or outside Hong Kong for the legality, validity and enforceability of the Opinion Documents and the Relevant Documents have been fulfilled;
- (q) that there is no subsisting prohibition or restriction, whether contractual or otherwise, binding on the parties to the Relevant Documents which will have any implication on our opinion and no party has notice or knowledge of any other party having entered into any agreement, document, arrangement or transaction which may in any way prohibit or restrict the parties from entering into and performing their obligations under the Relevant Documents;
- (r) that there is no document not examined by us which would affect or have any implication on this opinion;
- (s) that there are no facts or circumstances which have not been disclosed to us that may affect our opinion expressed in this opinion;
- (t) that where the Relevant Documents were or will be executed outside Hong Kong, formalities for such execution required by the laws of the place of execution have been or will be complied with;
- (u) that the choice of law to govern the Relevant Documents has been made in good faith;

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- (v) that the Relevant Parties have not sought and are not, and will not be, seeking to conduct any relevant transaction or any associated activity in a manner or for a purpose not evident on the face of the Opinion Documents or the Relevant Documents that is illegal, void or voidable;
- (w) that there has been no bad faith or fraud, coercion, duress or undue influence on the part of any of the parties to the Relevant Documents and/or their respective directors, employees, agents and advisers;
- (x) that the transactions contemplated under the Relevant Documents have not been rescinded or terminated and the relevant parties thereto have not breached and are not in default of any provisions of the Relevant Documents;
- (y) that no steps have been or are being taken to appoint a receiver, receiver and manager, judicial manager or liquidator over or to wind up the operations of any of the Relevant Parties and no equivalent or analogous proceedings are being taken in respect of any of the Relevant Parties or any of their assets, and no resolution has been passed or is being passed nor any petition presented to any competent court in connection with the appointment of a receiver, receiver and manager, judicial manager or liquidator or any equivalent or analogous appointment in relation to any of the Relevant Parties;
- (z) that the Relevant Parties were each solvent at the time of, and immediately after, the execution and delivery of the Relevant Documents, and that such parties will not be rendered insolvent as a result of their execution and delivery of the Relevant Documents;

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- (aa) that the Opinion Documents describe accurately and fairly the Tokens, their characteristics and usages; and

- (bb) that no foreign law is relevant to or affects our opinion stated in this opinion, our opinion will not be affected by the laws (including, without limitation, the public policy) of any jurisdiction outside of Hong Kong, and insofar as the laws of any jurisdiction outside of Hong Kong may be relevant, such laws have been or will be complied with.

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CONTINUED

Schedule 3

Qualifications

This opinion is subject to the following qualifications:

- (a) we express no opinion on tax matters and in particular, we express no opinion on the tax implications of the Proposed Offering or of any transaction or activity contemplated by the Opinion Documents or the Relevant Documents;
- (b) we express no opinion as to whether the Relevant Parties (or any of them) have complied and will continue to comply with all applicable anti-terrorism, anti-corruption and anti-money laundering laws, regulations, directives, notices or guidelines;
- (c) our opinion in this opinion is strictly limited to whether the Tokens *themselves* constitute “securities” under Hong Kong law, and we express no opinion as to whether the Tokens may be offered or sold or listed, whether directly or indirectly, in a jurisdiction other than Hong Kong;
- (d) we have not investigated, nor verified the accuracy or completeness of, the facts and information contained in the Opinion Documents, and we are not responsible for investigating or verifying whether any material fact has been omitted from such documents;
- (e) other than the Opinion Documents, we have not examined any contract, instrument or other document entered into by or affecting any of the Relevant Parties;

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CONTINUED

- (f) we express no opinion as to whether the Opinion Documents or the Relevant Documents constitute legal, valid, binding and enforceable obligations of the parties thereto under all applicable laws (in particular, the laws of Hong Kong). In this respect, we would highlight that our scope of work did not entail a general review of the Whitepaper or the Relevant Documents (an example of which may be a token purchase agreement relating to the sale and purchase of the Tokens);

- (g) our opinion in this opinion is not binding upon MA or the Hong Kong courts, and there is no assurance that MA will not assert a contrary position or that a Hong Kong court considering the issues would not hold contrary to such opinion. Furthermore, no assurance can be given that future legislative or judicial changes, on either a prospective or retroactive basis, would not adversely affect the accuracy of this opinion;

- (h) we have not made any enquiries or investigation concerning any of the Relevant Parties and in particular, we have not carried out a due diligence exercise on the Farmland;

- (i) other than the Tokens *themselves*, we express no opinion on the digital tokens, cryptocurrencies or assets created, issued, distributed, or transacted via the Platform and/or the Applications. For the purpose of this opinion, we have assumed that such digital tokens, cryptocurrencies and assets would not be subject to regulation under the laws of Hong Kong (in particular, but not limited to, the SFO);

- (j) furthermore, we express no opinion as to whether the Platform, the Applications or the other activities (both actual and proposed) of the Relevant Parties are or will be in compliance with

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all applicable laws (including, but not limited to, the laws of Hong Kong). In this respect, we have understood from the Whitepaper that the Relevant Parties have or will obtain *separate* legal advice from various *other* legal counsel with respect to the legal compliance of the Platform and the Applications in the relevant jurisdictions (see, for example, page 8 of the Whitepaper);

- (k) we express no opinion as to whether the Opinion Documents and the Relevant Documents are sufficient for any commercial purpose intended, and we express no opinion on the commercial or technological aspects of the Tokens.

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CONTINUED

ANNEX A

The Farmland Protocol Whitepaper

v0.2 & v0.3

Farmland Protocol

Whitepaper

v0.2

By Farmland Core

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一、Farmland介绍

1、总述：

Farmland是一个去中心化的跨链Defi挖矿及交易分发工具。

通过其创新性的融合跨链技术、独有的聚合和分发技术及DAO治理方式，Farmland拥有了以下核心优势：

- 1、跨链的资产利用：不同于目前主要利用eth网络的Defi生态，Farmland可以帮助持有不同公链上资产的用户参与Defi挖矿等活动，典型的包括比特币-以太坊网络价值转移
- 2、0 transfer gas fee：为用户省去了动辄上百美元的挖矿、提取手续费，解决了挖矿用户的核心痛点
- 3、真正的去中心化：在聚合层面，Farmland不同于其他中心化的聚合器，该协议是完全去中心化得实现聚合、挖矿和收益分发功能；在跨链层面，Farmland不依赖于中心化的custodian（注1）
- 4、高安全性：除了充分的去中心化，避免资金池跑路风险，Farmland Protocol还区分了不同风险等级的挖矿协议，通过叠加保险协议层，实现了目前最安全的挖矿环境
- 5、开放集成性：除了Farmland本身提供的跨链协议，用户还可以通过farmland集成不同的跨链协议，实现充分的开放性

2、目标

目前的DeFi产品已经向那些深度玩家们展现出了巨大的潜在价值。去金融中介、去中心机构信任风险等，DeFi产品所解决的每一个问题，都带来了金融体系的效率提升。我们已经看到了去中心化预言机、借贷、支付、交易等一个个DeFi组件日趋完善，Defi的摩天大厦已经隐约可见。

然而目前的DeFi仍旧存在着大量悬而未决的问题。难于理解和使用、高费率带来的高资金门槛、代码漏洞及后门带来等资金安全问题，都限制了用户使用DeFi产品。另外，每一条公链都像一个信息孤岛，公链上的资产更难以跨“界限”流动，各个公链的社区因此很难联合起来。DeFi在承担挑战传统金融的路途中，这些都是必须要解决的问题。

就跨链这个需求而言，目前市场上已有的DeFi解决方案而言，我们看到几乎所有的产品都围绕以太坊网络来实现。不管是在Lending、exchange还是derivatives，都是基于以太坊网络实现的，这就忽略了人数庞大的比特币社群以及其他公链社群，这些社群人数的总和可能大大超越了以太坊本身的社群。

为了解决这些现有的问题，Farmland在市场上已有的跨链方案基础上，先采用融合集成的方式，用来帮助用户跨链挖矿，然后再规避已有方法的缺陷来发展更为先进的跨链方案。同时，由于Farmland聚焦于DeFi挖矿领域，通过创新性的聚合和分发合约，使用户能够以非常低甚至0手续费的形式进行DeFi挖矿，降低了Defi挖矿的门槛，实现了真正的普惠。

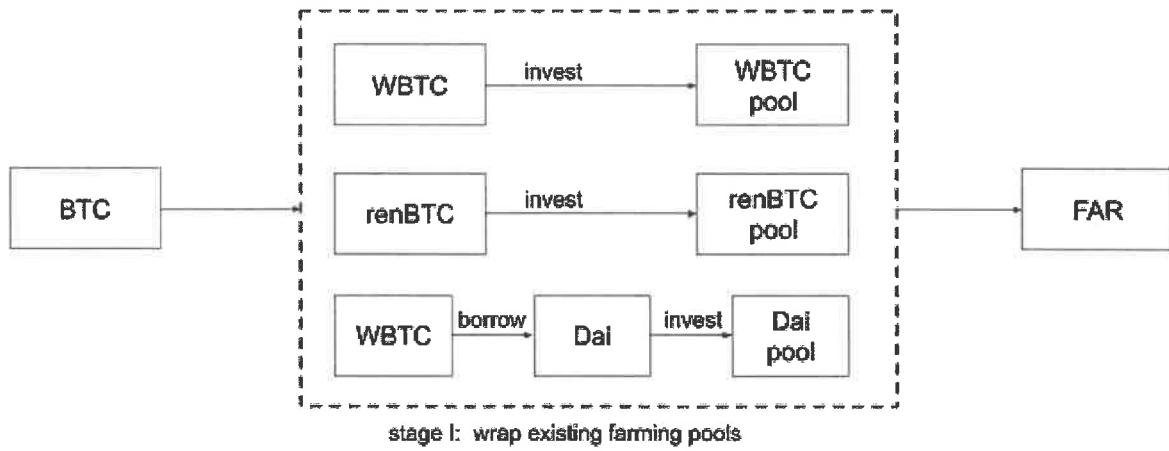
3、实现流程

虽然我们目标是实现所有主流公链的跨链DeFi功能，成为用户跨链DeFi的第一入口，但是我们将首先选择一个跨链对，即比特币-以太坊的跨链挖矿功能。选择比特币的原因是不言自明的，除了比特币市值超过了其他公链总额之外，其巨大的持有者数量也是一个重要的考虑因素。

我们实现比特币-以太坊跨链聚合挖矿功能，在技术上将分为三个不同的实现阶段，在用户层面并没有明显的感知变化：

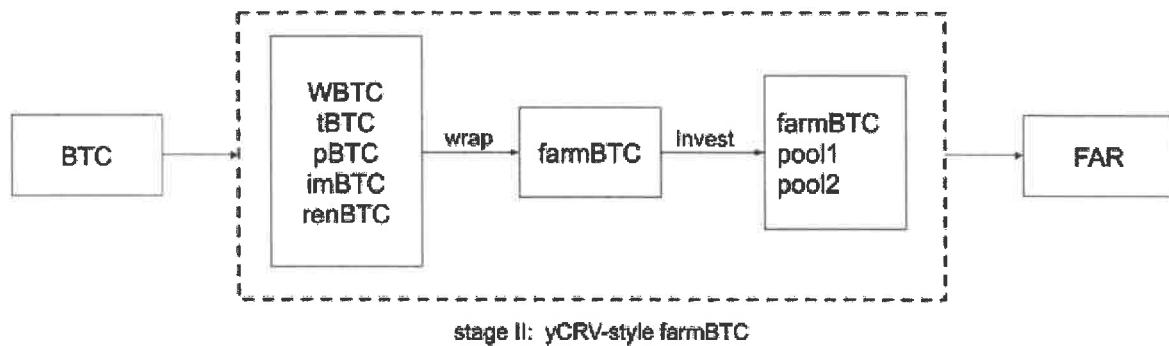
阶段一：实现跨链聚合挖矿阶段

前端集成WBTC、renVM等现有跨链技术，后端依靠Farmland体系实现聚合挖矿及交易分发功能。用户将BTC直接转入Farmland，并绑定以太坊收益地址，系统在挖矿获得收益后，将自动把收益分发到用户的ETH地址。在实现层面，Farmland将会把用户的BTC通过WBTC、renVM转换成以太坊上的WBTC和renBTC，然后再通过诸如makerDAO的工具，转换成Dai进行挖矿。



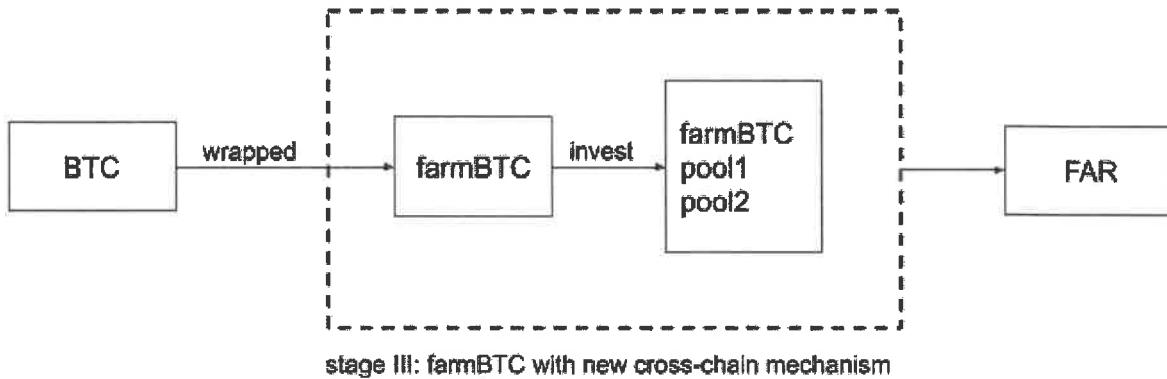
阶段二：过渡阶段。

我们将引入farmBTC的概念，该阶段目的是为第三个阶段铺垫。farmBTC是一种合成资产，主由WBTC、imBTC、renBTC等构成。类似于yCRV由USDC、Dai、USDT等组成等。



阶段三：farmBTC阶段

在这个阶段，用户打入的BTC将被直接转换为farmBTC。该转换机制，以及其优点将在下文较为详细得说明。



用户的FarmBTC将被用来进行聚合挖矿，聚合挖矿的技术实现以及如何实现0手续费将在下文详述。

二、系统设计

1、BTC打包技术

最近几年，资产跨链技术，比如将BTC打包或者映射到其他公链上（例如以太坊）一直是行业热点之一。但是目前这些跨链项目没有一个被认为是没有缺陷的。许多项目专注于创造ERC20版本的BTC，这是一个相对简单的跨链技术领域。

已有的技术概览

WBTC

WBTC通过中心化的托管机构，比如BitGo来发行100%保证金的ERC20版本的BTC。只有经过授权的机构才能够接收来自用户的BTC，然后生成或者销毁WBTC。一些机构也需要进行KYC。虽然大多数普通用户没办法直接使用它，但是WBTC目前仍被较为广泛使用。

imBTC

imBTC是由Tokenlon发行的并由imToken支持的中心化的跨链BTC。imBTC对应资产的是锁定在中心化的冷钱包里的BTC，用户可以在imToken的app里把BTC换成imBTC。

tBTC

目前tBTC仅支持以太坊，并且需要用户储存确定几个确定数额的BTC——0.002, 0.01, 0.1, 0.2, 0.5和1个BTC。这肯定让用户感到困惑，而且在极端的市场波动情况下，tBTC的方案会导致tBTC和BTC不能1:1绑定。

pBTC

pBTC使用了保险沙盒作为中间媒介，pBTC现在支持几个不同的公链BTC、LTC和EOS，然而这种管理环境非常脆弱，很容易被攻击。

2、关于farmBTC

目前，我们流动性挖矿平台的开发已经启动。作为BTC-以太坊跨链的中间介质，我们引入farmBTC的概念。具体的，我们有以下的架构设计：

首先，我们选择一到两个现存的工具，将用户的BTC转换成ERC20版本的BTC，具体可能会采用WBTC和renBTC。我们将在这些打包的BTC基础上，再次进行二次打包。这个过程完全在以太坊的链上实现。这些被二次打包的BTC将作为基底性资产被用于我们的流动性挖矿。

第二阶段，我们将使用类似于yCRV生成的方式来铸造farmBTC，具体的指标在下文详述。在这个阶段，farmBTC将基于混合的一揽子打包BTC，这将显著得降低单一底层失效的风险。

这一阶段的目标：

- farmBTC将是完全去中心化的
- farmBTC有100%的保证金，不增加BTC在市场上的整体供应
- farmBTC可以被无缝且及时得被铸造或者赎回，用户可以在任意时间兑换任意数量的farmBTC

在这里引入几个用于实现farmBTC的技术：

看守者

看守者（crows，中文也可以翻译成乌鸦）：一种特殊的参与节点，来保证farmBTC的安全性。看守者将在farmBTC的治理上扮演一个重要的角色。我们设计了一种特殊的机制：看守者需要抵

押不同的资产来作为该节点正直且安全的保证。目前其他项目都只抵押了自己的代币或者单一资产，该资产价格下跌时，节点的安全性将变得不能被保证。

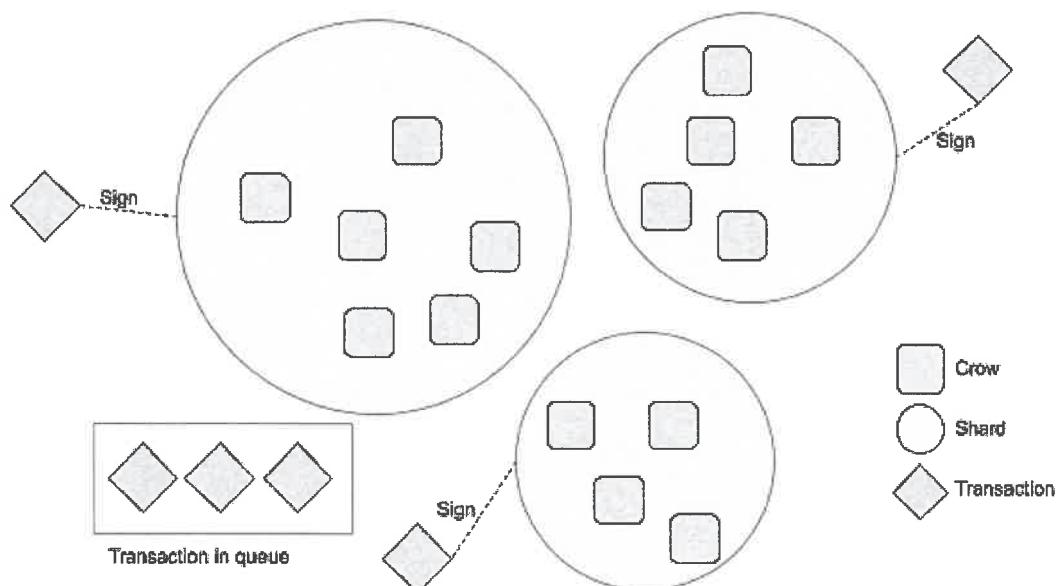
我们为参与系统运转的看守者设计了一个良好的激励机制，并且如果看守者具有较长的正直的历史记录，他们还能获得额外的奖励。我们也考虑到，可以增加正直看守者在整个系统中的权重。作为激励的奖励在整个生态当中扮演着重要的角色，这是因为不如预期的回报将会大大增加看守者作恶的动机。

每一个看守者节点应该承诺正直、公正而且他们有足够的动机去保持这种行为，因为不良行为将使他们没有明显的收益而且未来遭受更大的损失。

我们对乌鸦有一个宽松的假设。即使是多只乌鸦都在恶意尝试欺诈该系统，其获胜的机会也将微不足道。

分片

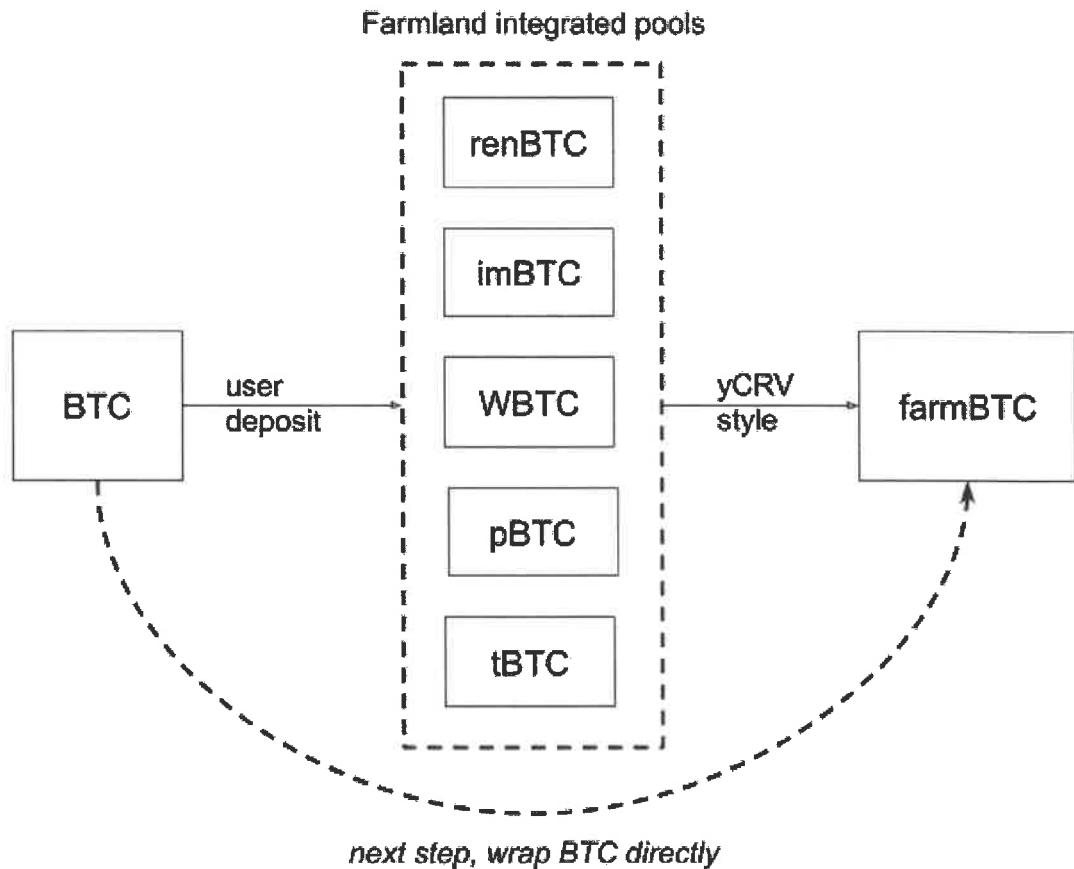
分片：我们的系统中引入分片的概念，这是为了进一步减小看守者作恶的风险。看守者每天在几个随机的时间点被随机分组几次，如下图所示：



这个过程帮助farmBTC抵抗理性和非理性对手的攻击，退一万步讲，即便在概率极小的情况下，攻击者攻击成功了，farmBTC始终能恢复其对BTC一对一的挂钩。

故障处理

当一些组团的看守者未能签署正常交易并恶意签署虚假交易时，我们称其为“处理失败”。这通常表示某些参与者失去了正常的资格，在这种情况下，他们的资产将被清算来保证一对一挂钩的资产。在清算发起者得到了应有的奖励之后，剩余的资产将被退还给前面的参与者。



在最后的阶段，我们将把farmBTC转移到我们自己设计的包装机制中，避免现有项目的问题，以创建最可靠的跨链协议，同时保持不需要许可、去中心化和去信任机制的特点。

3、一站式聚合

去中心化的聚合挖矿、收益分发

目前DeFi挖矿面临着极高的手续费，一次完整的挖矿、收益提取到账过程可能花费数百美元。我们来分析一下这部分的费用构成，以从钱包中ETH和Ample开始，到参与YAM中AMPL_ETH_UNI_LP池挖矿为例：

1. 如果从没使用过uniswap，需要分别对ETH和AMPL资产都进行授权，手续费各为约0.01ETH；
2. 首先在uniswap上将ETH包装成WETH，此步骤需要约0.08ETH；
3. 之后在uniswap的AMPL-ETH交易对，点击Add Liquidity增加流动性，此步骤需要约0.04ETH；
4. 在获得了AMPL-ETH交易对的LP代币后，即可在YAM的AMPL_ETH_UNI_LP矿池入金，此步骤需要约0.03ETH；
5. 产生收益后每次提取收益需要约0.04ETH的费用。

假设产生收益后一次提取完成，此流程共花费手续费约0.2ETH，折合约80美元。

我们可以根据一些挖矿项目的收益率和上面介绍的手续费，来计算一下，挖矿盈利所需要的资金门槛。短期来看，deposit和withdraw的手续费影响显著，在这里我们不考虑并假设挖矿人采用了长期挖矿策略，并每日提取收益（即挖提卖），那么一年的手续费为：

$$0.04ETH \times 365 \times 410USD/ETH = 5986USD$$

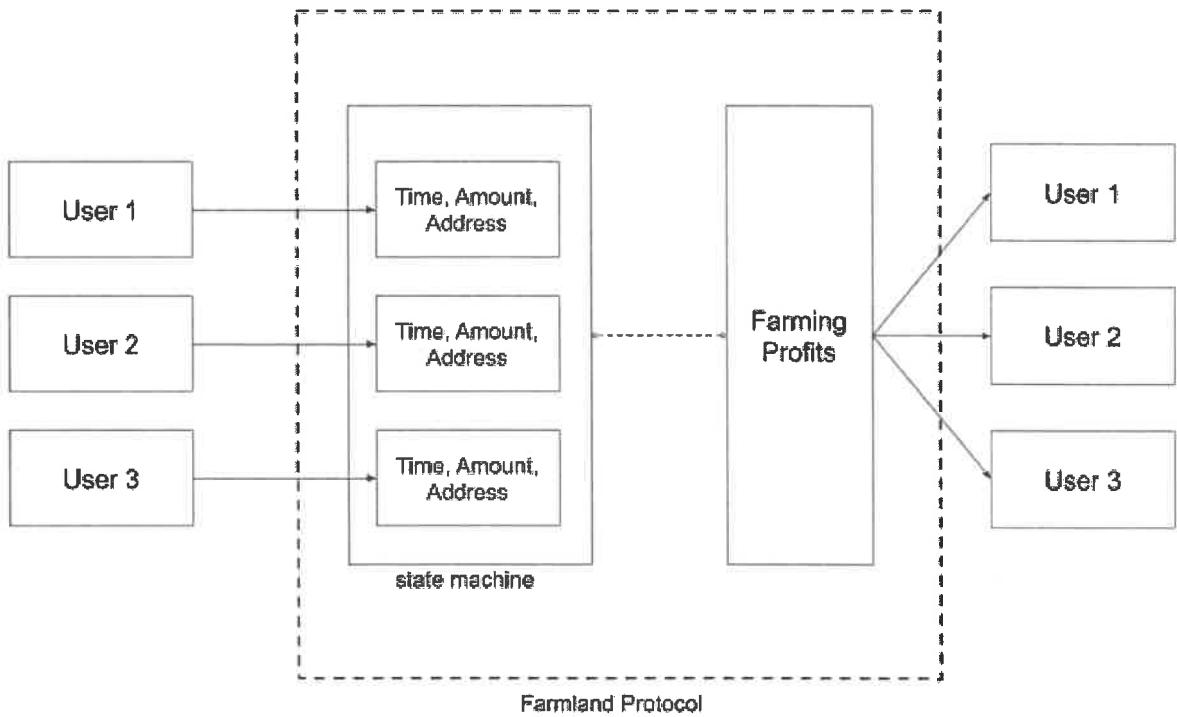
即在100%年化收益的情况下，用户需投入超过 $5986USD \times 2 = 11972USD$ 才会使自身收益大于所支出的手续费。当然，考虑到实际情况的多变，如开始数日的高年化利率，用户可能并不会每日挖提卖，实际有意义的资金投入有所不同，但应至少为数千美元，甚至更高。而对于投入数万美元的用户，其实际收益率也会因为手续费而大打折扣。

目前，有部分机构提出了中心化的聚合方案，用来帮助多个用户均摊高额的手续费，但是对用户而言这些问题都有三个问题：1、中心化资金池，存在跑路风险；2、收益不透明，很多产品给用户提供的收益率实际上远低于挖矿的实际收益率，这些机构利用信息不对称，吃掉了很多属于用户的“无风险收益”；3、挖矿协议如果出现漏洞，参与者资金丢失，机构不会给用户补偿。中心化的聚合方案没有办法规避以上三个问题。

我们的方法

Farmland Protocol利用智能合约实现了挖矿资金的自动聚合、挖矿以及自动化的收益分发，过程完全通过链上，资金流向及收益分配，公开透明可查。

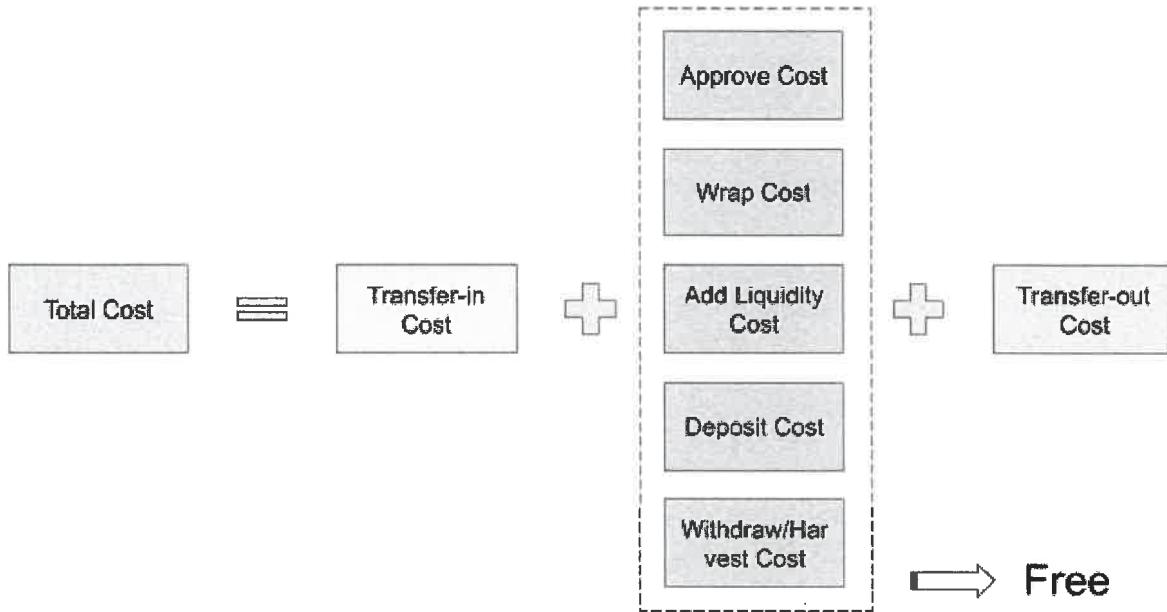
该功能，具体实现的方法如下：



开放聚合

读取、记录发送资金的地址、时间、金额
到一定的条件时，将该部分资金作为整体推进到挖矿矿池
到一定时间后，自动提取收益
将收益放到收益池
从收益池向发送提取收益请求的用户发送收益

为了实现更低的门槛，即合格用户0成本挖矿，收益池将承担所有人的挖矿费用，但是由于采用了聚合的功能，每个人的成本都大为降低，同时收益池额外的staking功能，也将弥补部分成本。
具体实现如下：



可以证明，采用了该协议，只要合格用户大于等于2个人，即可实现明显的成本节约，实现手续费的“无感化”如上图所示，用户只需要承担代币的转入转出费用，即正常的ETH转账费用，而不用承担高昂的ETH合约费用。

在具体的使用上，我们也减少了用户调用钱包、同意协议的次数以及资产的种类。我们以Curve的Y池 Deposit为例，如果用户持有DAI或者USDC，并希望挖矿，用户需要钱包内同时有足额的ETH作为手续费（至少0.3ETH），如果从未使用过Y池，需要调用钱包3次左右。而通过Farmland，我们可以做到只需要钱包里有约0.05ETH，同时最少只调用钱包1次，即可完成相同的交易。

由于需要自动实现费用的抵扣扣除，我们需要知道挖矿带来的收益与实际成本之间的关系，在这里我们就需要使用预言机来调用挖矿收益币种与成本币种之间的兑换关系，具体可以通过预言机获取当前市场挖矿收益情况（如从yieldfarming.info等网站），并自动计算当前挖矿利润。围绕这部分挖矿利润，未来可以设置如利润回购、转入转出手续费补贴等形式。

合约实现挖矿的方式：合约通过零存定时整取方式参与挖矿

收益发放的方式：合约可设置定时方式进行收益的发放，用户也可以主动withdraw收益

为了防止恶意用户对Farmland Protocol进行女巫攻击，我们将设定用户进行挖矿的基本资金和时间要求，这个数值可以用Duration来计量：

$$Duration = Amount \times LockTime$$

当用户的Duration低于合理值时，系统将拒绝服务或者预先收取手续费。一般而言，只要用户资金量大于1000USD，时间超过3天，甚至更低的情况下，Duration就能够达到标准。

以一个年化收益率平均在50%的资金池为例，1000USD的期望收益为：

$$1000USD \times 3 \times 50\% \div 365 = 4.1USD$$

如果用户数20，则3天的总收益约为80USD，已经足够覆盖投资资金池的手续费。在用户数更多的时候，我们可以提供更低的进入门槛。

由于用户挖矿所获的收益为其他协议的代币或者eth等，这些资产价格经常会剧烈波动。在某些极端情况下，Farmland Protocol会因为手续费支出而发生亏损，导致系统无法继续运行，这里我们提出两个方法来避免这个问题：

- 收益端扣除：Farmland Protocol将在收益池内，根据手续费和收益代币的兑换比例，预先收取该收益，这一步同样需要调取预言机的数据。我们同时希望能够引入AMM，帮助实现快速收益兑换，减少因为延时和滑点带来的总收益损失，具体实现方法如下：

使用预言机获得Farmland预期收益，并和以太坊网络费用进行比较：

- 如果收益>费用，则不做额外操作；
 - 如果收益<费用，需要提高挖矿分成比例或者延长抵押币种质押时间，这一选择可以由用户在最开始将资金投入合约时进行选择。
- 预留安全池：Farmland Protocol将在每个收益池内，收取收益的1%作为预留安全池，来预防特别极端情况下，合约无法获得有效启动费用的问题。

地址链接

为了让更多使用者方便地使用我们的协议，我们考虑了很多用户从中心化交易所以及钱包发送他们的本金的情况，在这种情况下，这些用户的发送地址和收益接收地址并不相同。

我们将分两种方式对收益进行分发，主要区别是，用户发送挖矿本金时，是从个人钱包还是从其他聚合地址发送的。

用户将可以从Farmland前端选择本金发送地址与收益接收地址不同的模式，在该模式下，Farmland将确认两个地址的关联性，并预先将收益发送到Farmland控制的收益池，然后再将收益发送到用户预留的收益接收地址。

用户需要向前端系统提交本金发送地址以及收益接收地址，Farmland将自动生成一个ETH地址，用户需要用本金发送地址向该地址发送确定数量（微量价值）的代币作为验证。

挖矿保险

作为入口型协议，Farmland将为更多初级用户提供便捷易用的服务。由于DeFi挖矿存在协议之间叠加嵌套的关系，其代码漏洞的风险是逐层累加的。这对于初级用户来讲意味着更大的危险，很多初级用户会因为DeFi协议较大的收益率而忽视了潜藏的本金损失风险。

为了给更多用户提供一个更安全的DeFi使用环境，Farmland Protocol引入了保险机制，这个机制将在Farmland的后续版本中推出。由于第一个版本的Farmland Protocol着重于去中心化聚合挖矿及收益分发，下面我们只概述一下该保险机制的基本原理和流程。

根据被集成的挖矿协议的一些特性，Farmland将对这些挖矿协议进行安全分级。这些特性涵盖了：代码是否已经被审计、安全存续时间等。安全分级将被分为：非常安全、较为安全、较为危险

和非常危险。对于较为危险和非常危险等级的协议，Farmland将会提示用户购买保险，以应对潜在的风险。

保费及偿付资金池：用户将可以根据自己的本金金额购买相应数额的保险，保费使用稳定币、eth或者Farmland治理代币支付。该部分保费中可能有少量金额（不大于10%）将被兑换成Farmland治理代币并被销毁，作为使用Farmland平台平台流量的成本，剩余的金额将成为偿付资金池。

偿付金额及流程：单一合约被偿付的金额上限为偿付资金池总量的15%，下限金额为损失本金金额与5倍于保费两者取的最小值。赔付认定需要通过社区投票，投票人为合格的偿付池参与者（即投入超过一定数额的保费，且没有被标记为不良信用的参与者）。

当同意赔付的投票人投入偿付池的金额，超过4倍的该项目赔付金额时，该赔付通过。但是，如果不同意赔付的投票人投入赔付池的金额，超过3倍于该项目赔付金额时，该赔付不能通过。所有参与投票的投票人将获得一定的奖励。

如果经过后期社会认定，投票人或者申请赔付的参与者，有恶意骗保或者恶意不赔付的情况，该投票人地址将被标记为不良信用，单次被标记为不良信用，将被没收少量保费投票权，且一段时间内不能投票。多次被标记为不良信用，将被没收投票权。

以上社区自治流程将完全在链上实现。

三、治理

在这一节，我们着重讨论Farmland Protocol第一阶段的治理，即实现了聚合挖矿及收益分发时的治理。

Farmland Protocol在经过初期测试和代码设计后，将会上线使用。度过初期中心化选择合适的参数和挖矿对象之后，Farmland的治理将完全进入DAO阶段。该协议受FAR的约束，任何改进将由FAR持有者投票决定。该治理系统可以控制的部分权力列举如下：

- 设立新的挖矿矿池并选择合适的挖矿协议
- 更新预言机地址
- 更改收益后端抽成比例
- 设立新的DAO community
- 更改清算门槛，LTV，清算奖金，每个池的封闭系数

Farmland Protocol

Whitepaper

v0.3

By Farmland Core

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I. Farmland Introduction

Abstract

Farmland is a decentralized cross-chain platform for DeFi farming and profit distribution.

Applying innovative blockchain interoperability, smart aggregation, distribution technology, and DAO governance, Farmland has the following core advantages:

1. Cross-chain assets utilization: Unlike the present DeFi ecosystem that fundamentally utilizes the ETH network, Farmland is capable of assisting users who hold assets on various public chains in order to participate in DeFi activities like farming, especially for BTC holders who wish to become involved in farming on ETH.
2. 0 Gas fee: Saving users' hundreds of dollars in farming, harvesting, and withdrawing fees, resolving the main point of problem for current farming users.
3. True decentralization: In terms of aggregation, Farmland is different from other centralized aggregators. To attain aggregation, farming, and revenue distribution functions, this protocol is completely decentralized. Moreover, for the cross-chain operations, Farmland does not depend on centralized custodians (Note 1)
4. High security: In addition to complete decentralization and mitigating the risk of capital pool loss, Farmland Protocol also categories farming pool tranches with different risk levels, and attains the most secure farming environment by overlaying insurance protocol layers.
5. Open integration: Besides the cross-chain protocol provided by Farmland itself, users can also incorporate multiple cross-chain protocols through Farmland.

Goals

The existing DeFi projects have displayed excellent potential value for qualified players. Every difficulty resolved by DeFi products, like disintermediation, trustless institutions, etc., resulted in crucial developments in the financial system's effectiveness. We have witnessed the

decentralized oracle, lending, payment, transaction, and other DeFi components becoming increasingly complete, and the future blueprint of DeFi is faintly noticeable. Nevertheless, presently, there exists several unresolved issues. Poor user experience, high capital requirements because of high rates, fund safety issues due to code vulnerabilities and backdoors, and other financial security issues have limited the users from using DeFi products. Besides, each public chain is like an isolated island of information. It is difficult for assets on different chains to flow across "boundaries", and it is therefore difficult for the communities of various public chains to unite. These are the problems that DeFi must solve while on the way to replace part of or even the entire traditional finance sector.

In the context of cross-chain resolutions for DeFi products accessible on the market, we notice that nearly all products are executed on the Ethereum network, whether it is in lending, exchange, or derivatives. These products overlook the enormous Bitcoin community and other public chain communities. The total amount of these communities might surpass the number of Ethereum greatly. To solve these existing problems, Farmland first integrates with existing cross-chain solutions and then develops more advanced cross-chain solutions. Meanwhile, as Farmland focuses on DeFi farming, through innovative aggregation and distribution methods, users can enjoy a very low or even zero handling fee, which reduces the threshold of DeFi farming. Users do not need to prepare thousands of USD stable coins to get meaningful profits.

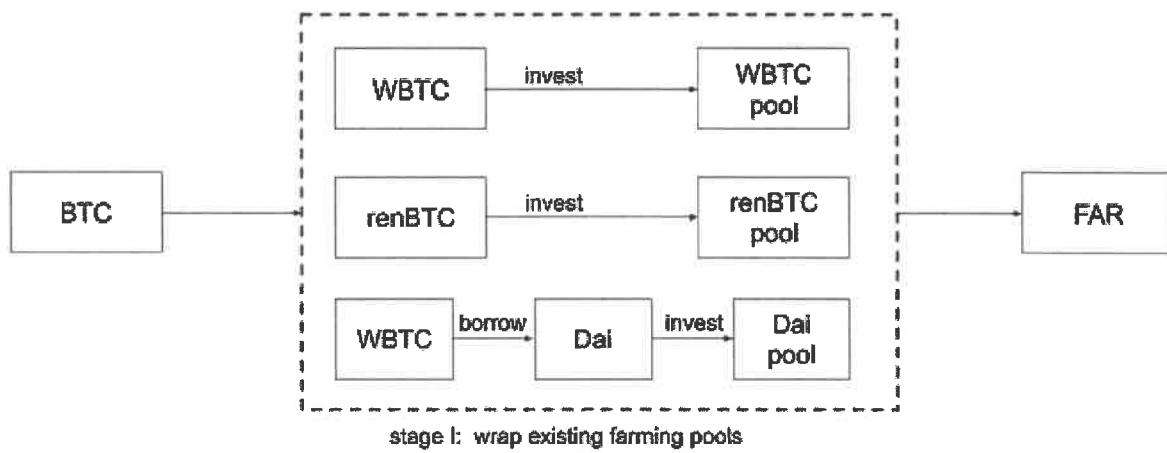
Procedures

The final purpose of Farmland is to combine all of the mainstream public chains and to become the entrance for cross-chain DeFi users. At the first stage, we make the choice of Bitcoin to incorporate with Ethereum DeFi farming, as the market value of Bitcoin surpasses the sum amount of other public chains and the number of token holders is also large. We implement the Bitcoin-Ethereum cross-chain aggregated farming tools, which will be achieved in three stages, without obvious changes in perception at the user level:

Stage 1: Realize the cross-chain aggregation farming stage

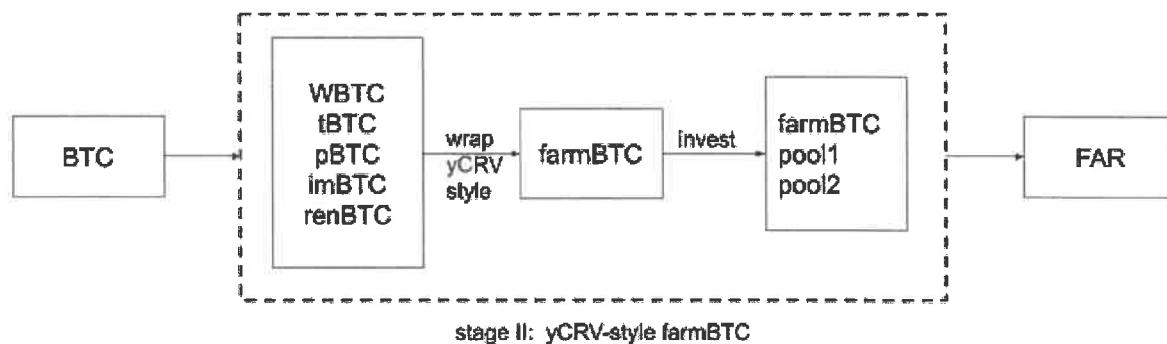
The front-end of Farmland combines the current cross-chain technologies like WBTC and renVM, while the Farmland back-end method intends to obtain aggregate farming and profit distribution functions. The user transfers BTC directly to Farmland and binds the Ethereum

address for receiving profit. After the system obtains the token from farming, it will automatically distribute the profit to the user's ETH address. At the level of implementation, Farmland would convert users' BTC into WBTC and renBTC on Ethereum by using WBTC and renVM network, and afterward, transform them into Dai for improved farming by tools like makerDAO.



Stage 2: Transitional stage

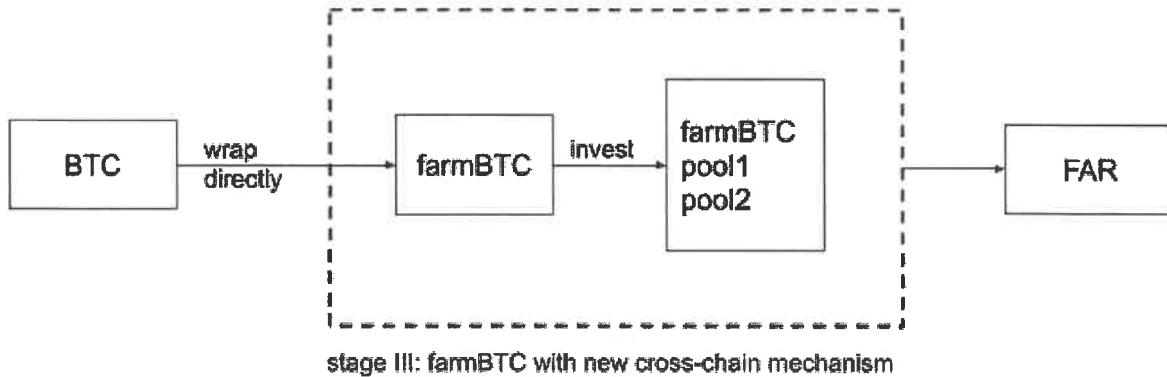
We will introduce the concept of farmBTC, the purpose of this phase is to pave the way for the third phase. farmBTC is a synthetic asset, mainly consisting of WBTC, imBTC, renBTC, etc. which is similar to yCRV, consisting of USDC, Dai, USDT, etc.



Stage 3: FarmBTC stage

At this stage, the BTC that the users sent would be directly converted to farmBTC. The conversion mechanism and its benefits will be described detailly in the next part.

The user's FarmBTC would be utilized for aggregate farming. The technical implementation of aggregate farming and how to attain zero handling fees will be explained in the following.



II. System Architecture

Wrapped BTC

The way of wrapping or mapping BTC on other chains (e.g. ETH), or in general, blockchain interoperability, has been considered a hotspot for the past many years in the industry. Nevertheless, no projects were proved to be perfect and did not require evolution. Many projects focus on creating ERC-20 Bitcoins, which is a comparatively less complicated sector for cross-chain operations.

Existing Projects

WBTC

WBTC cooperates with centralized custodian agencies like BitGo to issue 100% backed wrapped ERC20 Bitcoin tokens. Only authorized merchants are allowed to receive Bitcoin, and mint or burn WBTC. Sometimes merchants also require the KYC process. WBTC is widely used, though it is impossible for normal users to use it directly.

imBTC

Issued by Tokenlon and powered by imToken, imBTC is also backed by Bitcoins that are locked in a centralized cold wallet. Users are capable of swapping BTC for imBTC on the imToken app.

tBTC

In present times, tBTC only supports Ethereum and needs the users to deposit Bitcoin of various fixed sizes -- 0.002, 0.01, 0.1, 0.2, 0.5, and 1 BTC, which might be confusing for users. Moreover, extreme market volatility might result in the one-to-one peg.

pBTC

Making use of a secure sandbox as an intermediary, pBTC is currently supporting various different chains including BTC, LTC, and EOS. Nevertheless, this type of execution environment may be vulnerable to attackers.

About farmBTC

During the inauguration time of the liquidity farming platform, instead of all the above, Farmland-wrapped BTCs were to be utilized like the fundamental intermediary trading currency. The following plan would be applicable:

Firstly, 1-2 existing tools will be selected to make our users' BTC switch to ERC20 BTC, for exchange WBTC and renbTC. Then, we will make the addition of another wrap on top of these wrapped BTCs to issue farmBTC. This procedure will be entirely done on the ETH blockchain, which is relatively insightful. These wrapped-twice BTCs would be primarily utilized for our liquidity farming.

Afterward, a yCRV-style mixed way of minting farmBTC will be introduced by us, similar to the figure displayed below. At this stage, farmBTC will be based on a mixed basket of wrapped BTCs and therefore essentially lessens the risk of fatal failure attached with one underlying asset.

Goals

- FarmBTC will be fully decentralized.
- FarmBTC will be 100% backed, without creating new Bitcoin supplies.
- FarmBTC will be minted and redeemed instantly and seamlessly. Users will be able to swap whatever amount at whatever time.

Crows

Crows (from scarecrows, a special term to describe participating nodes, making sure the security of farmBTC) will perform an essential part in the governance of farmBTC's. For crows, we intend to design unique mechanisms to deposit several assets as proof and

secure integrity methods. This differentiates us from current projects, many of which only contain one kind of asset as deposits.

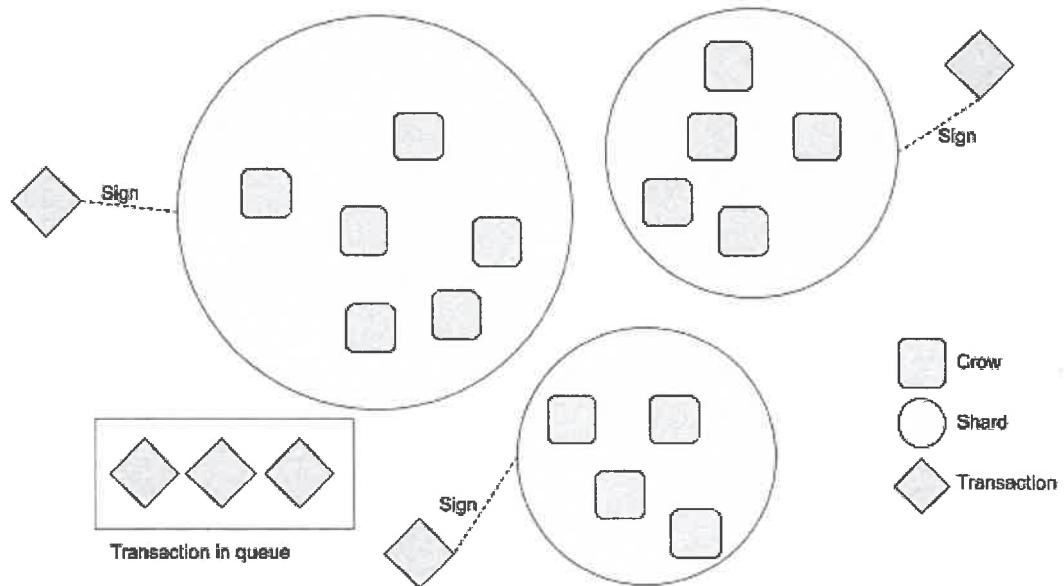
We create a good structure of rewarding for each participating crow and extra rewards for the ones with a long history of integrity. Moreover, we also consider extending the weight of good crows in the whole system of governance. In the ecosystem, the rewards as incentives have a crucial role to play, this is because a worse-than-expected reward will highly enlarge the chances of crows' acting maliciously.

Good behavior must be displayed by each node as well as they must have good incentives to keep so; for dishonesty would not be able to bring them any profits but a big loss for future incomes.

We apply a loose assumption of good crows. Even multiple crows are making efforts maliciously to scam the system, their chance of success will be negligible.

Shards

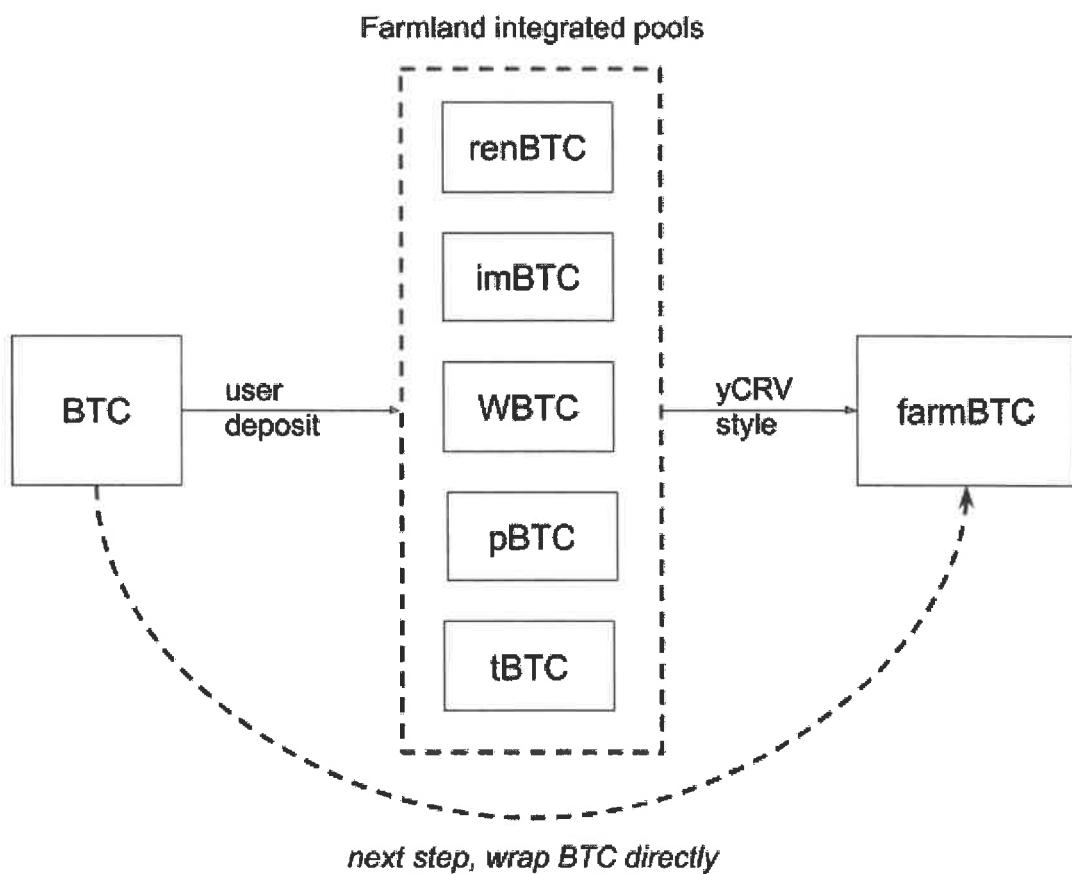
In order to further mitigate the risk attached to crows regarding bad behaviour, Shards are introduced to our system. Crows are grouped randomly various times at some random time every day, as shown below.



These help farmBTC to be able to avoid attacks made by both rational and irrational adversaries. Regardless, every time, farmBTC is able to restore its one-to-one peg in the unforeseen event that an attack succeeds.

Failure Handling

When some grouped crows can't sign a transaction and maliciously sign a false transaction, it is called "Handling Failure". This traditionally illustrates a liveness failure from some participants. As such, their bonds are reimbursed to preserve the one-to-one peg, and each remainder is paid to them once the liquidation initiator is rewarded.



Finally, we will move farmBTC to a wrapped mechanism designed by ourselves, learning from all the benefits and drawbacks of existing projects in order to establish the most reliable

cross-chain wrapping protocol, while remaining permission less, decentralized, and trustless.

One Hub for All

The Primary Pain Point - Fees

Presently, DeFi farming users face extremely high fees. The process of depositing, harvesting, and withdrawing can cost hundreds of dollars. Let's analyze the cost structure, starting with ETH and AMPL in the wallet to participating in AMPL_ETH_UNI_LP pool farming in YAM as an example:

1. If you have never used Uniswap, you need to authorize both ETH and AMPL assets separately, and the handling fee each is about 0.01ETH;
2. You need to wrap ETH to get WETH on Uniswap, of which this procedure costs about 0.08ETH;
3. On the Uniswap AMPL-ETH pool, click the Add Liquidity button to raise liquidity, of which this procedure costs about 0.04ETH;
4. After obtaining LP tokens of the AMPL-ETH trading pair, you can deposit them in the AMPL_ETH_UNI_LP farming pool of YAM. This step costs about 0.03 ETH;
5. If you want to withdraw profits after some time of farming, each withdrawal costs a fee of about 0.04 ETH.

If we assume that one withdrawal is completed after the generation of revenue, this process costs a total of about 0.2 ETH, which makes up to almost 80 USD.

Based on some farming projects and the fees introduced above, it is possible for us to calculate the capital threshold which is needed for profitable farming. In the short-run, the deposit and withdrawal fees hold a crucial impact. Here, we do not consider them, and

assume that the farmer applies a long-term farming strategy and withdraws the income daily (that is, farming, harvesting, and selling), then the one-year fee is:

$$0.04ETH \times 365 \times 410USD/ETH = 5986USD$$

means that in the case of pools with 100% annualized income, users are required to invest more than $5986USD \times 2 = 11972USD$ in order to generate their income higher than the fees that are paid for processing. No doubt, if we take into account the variability of the actual situation, as the high annual interest rate in the first few days, and also that users might now farm and sell daily, the actual meaningful capital investment is different. However, it should be at least several thousand dollars, or even higher. For users who invest tens of thousands of dollars, even though they are generating profits, the actual rate of return will also be highly lessened due to the handling fee.

At present, some institutions have suggested centralized aggregation methods to assist multiple users sharing high farming fees. However, for users, these products contain three problems:

1. There are always risks of human integrity for centralized fund pools;
2. The income is not transparent. The return rate provided to users by several products is far lower as compared to the actual return. These institutions use information asymmetry to accommodate a large part of "risk-free returns" belonging to users;
3. There are hidden terms that if loopholes occur and farmers' funds are lost, the organization would not compensate users.

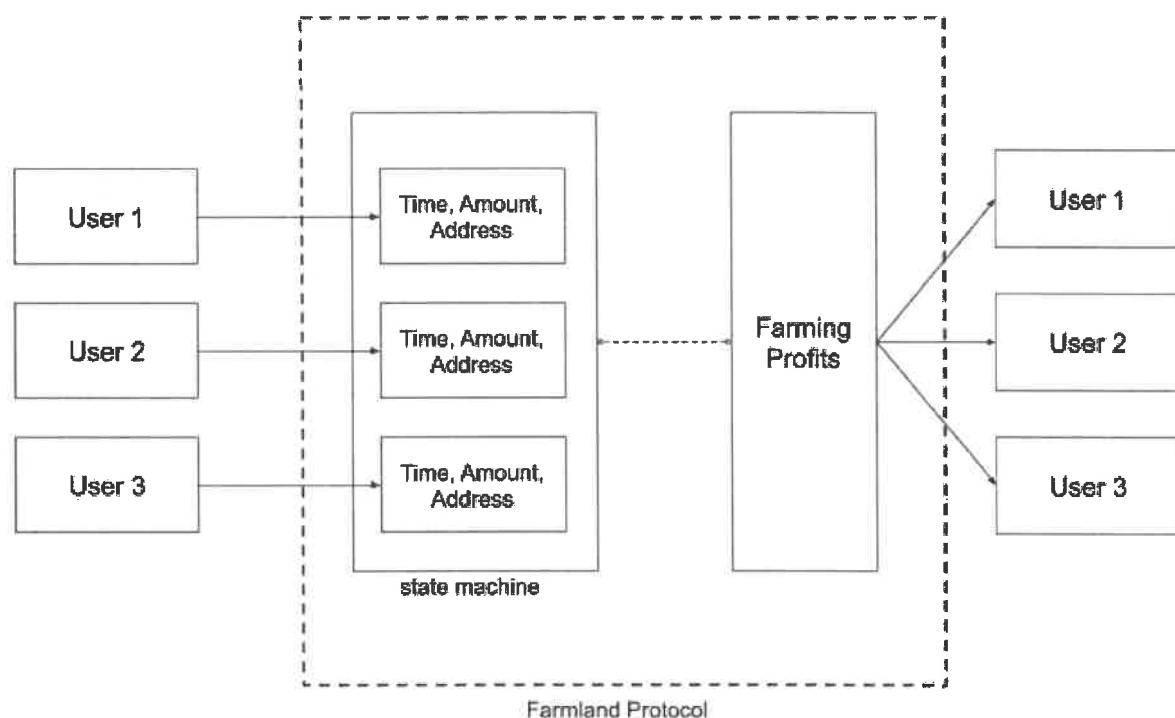
Centralized aggregation solutions are not capable of fully avoiding the above three problems.

Our Approach

Aggregation

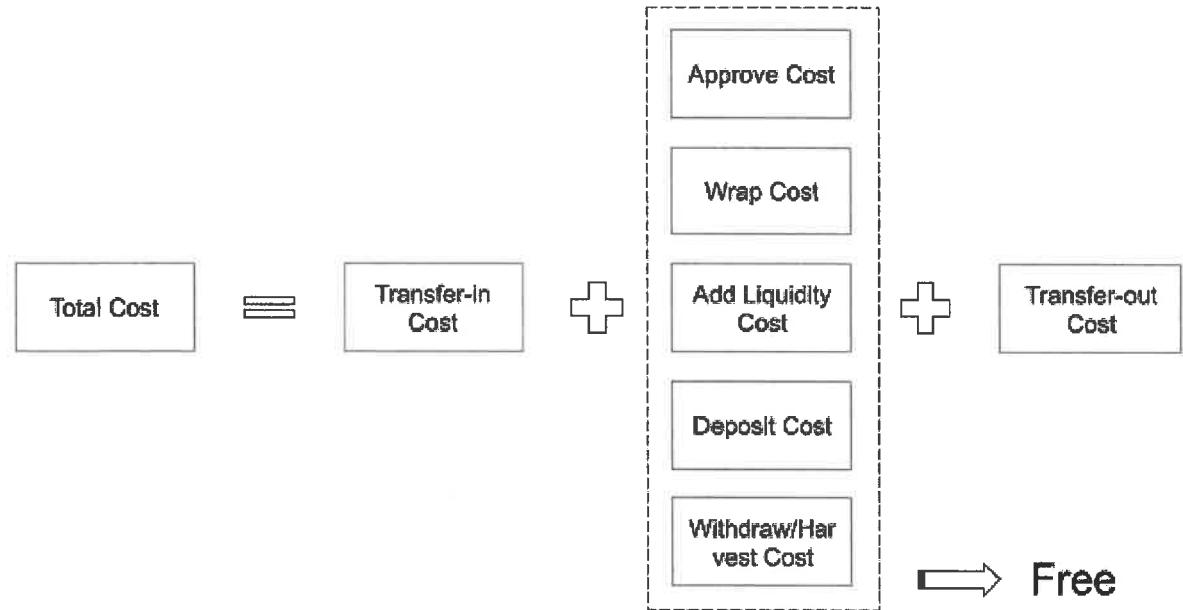
Farmland Protocol employs smart contracts to reach the funds' automatic aggregation, farming, and automatic revenue distribution. The process is completed on the chain, and the flow of funds and revenue distribution are open and transparent.

The specific implementation is as follows:



- Aggregate users' funds and store the address, time, and amount of the funds sent.
- Send funds periodically to farm designated pools.
- Harvest and withdraw funds periodically and distribute profits to users according to their pre-settings.

Following the method mentioned earlier, qualified users are farming at zero cost, which is paid from the revenues generated through farming. The details are mentioned below:



It is provable that as long as the qualified users are higher in contrast to 2 people or equal to them, significant costs can be reduced with the agreement, and zero handling fees can be observed. As illustrated in the above-mentioned figure, users are solely required to pay for the transfer of tokens, which is normal ETH transfer fees, without having to pay high contract fees.

Particularly, the amount of times users interact with wallets is also lessened by us. Taking the Curve Finance's Y pool deposit as an example; If a user holds DAI or USDC and wishes to farm, the user must have adequate ETH in the wallet in order to pay handling fees (at least 0.3 ETH). If the Y pool has never been utilized, they must call the wallet about 3 times. With Farmland, we can complete the same transaction only by having about 0.05 ETH in the wallet and calling the wallet at least once.

Since we should calculate the percentage we withhold for fees, we are required to be aware of the relationship shared by the benefits of farming and the actual costs. Therefore, we

must make use of an oracle to fetch the exchange rate of the revenue coin and the lost coin. Specifically, the current market farming revenue might be gained through the oracle machine (for instance, from websites like <https://yieldfarming.info>), and the current farming profit can be automatically calculated. After this, forms such as profit repurchase, transfer in and transfer out fee subsidies can be established in the future.

Duration

To prevent malicious users from Sybil attacking the Farmland Protocol, we will set the user's basic funding and time requirements for farming. This value can be measured by Duration:

$$\text{Duration} = \text{Amount} \times \text{LockTime}$$

In case of duration being lower as compared to a reasonable value, the system will reject service or charge an in-advance fee. Ordinarily speaking, as long as the number of user funds is higher as compared to 1000 USD and the time is exceeding 3 days or even less on specific days when high-yield pools come out, the Duration is capable of reaching the standard. Take a fund pool with an average annualized rate of return of 50% as an example, the expected return of 1000 USD is:

$$1000\text{USD} \times 3 \times 50\% \div 365 = 4.1\text{USD}$$

If the number of users is 20, the total return in 3 days is about 80USD, which is enough to cover the fees. When there are more users, we can provide a lower Duration threshold.

Since the prices of the rewarding tokens like CRV, BAL, YFI, etc. most commonly fluctuate sharply, in several extreme cases, Farmland Protocol would lose money because of handling fee expenditures. This might cause the operating system to fail. Here we offer two techniques to avoid this problem:

Income deduction: Farmland Protocol will gather revenues in advance, applying the data from the oracle. Through utilizing the oracle to attain the expected income of Farmland and make a contrast with the Ethereum network fees:

- If income > expenses, no additional operations are required;

- if income < expenses, users must increase the farming share ratio or expand the farming period. The users hold the right to make this choice when putting funds into the contract at the beginning.

Reserved security pool: Farmland Protocol would collect 1% of the revenue in each revenue pool as a reserved security pool in order to avoid the problem that the contract cannot attain enough start-up fees when following special extreme circumstances.

Addresses Linked

To allow more users to use our protocol conveniently, we have taken notice in the situation where many users send their principal from centralized exchanges and wallets. In such cases, the sending address and income receiving address of these users are not the same.

The profit will be distributed in two ways. The primary difference is that when the user sends their principals, it is sent from the personal wallet or other aggregate addresses.

Users would be capable of choosing a mode if there is a difference between the principal sending address and the income receiving address on the Farmland front end. During this mode, the relevance of the two addresses will be confirmed by the farmland and will send the income in advance to the income pool regulated by Farmland. Afterward, it will transfer the income to the user's reserved income receiving address. **Insurance**

As an entrance to the DeFi world, Farmland will provide more fundamental users along with convenient and easy-to-use services. Since DeFi farming products often include a nested relationship among each other, the risk of code vulnerabilities is cumulative. This suggests a greater risk to primary users. Many primary users are carefree regarding the potential risk of principal loss because of huge returns.

To provide more users with a safer DeFi environment, Farmland Protocol introduces an insurance mechanism, capable of being implemented in subsequent versions of Farmland. Since the first version of the Farmland Protocol focused on decentralized aggregate farming

and revenue distribution, we will now solely outline the basic principles and procedures of the insurance mechanism below.

On the basis of various dimensions of integrated farming protocols, Farmland will list these farming protocols with safety standards. These include codes auditing, online time, etc. The safety classification will be divided into 4 parts: very safe, relatively safe, relatively dangerous, and very dangerous. For relatively dangerous and very dangerous level pools, Farmland will request users to purchase insurances.

Premium and compensation fund pool: Users will be capable of purchasing a corresponding quantity of insurance based on their principal amount, and premiums will be paid in stablecoins, ETH, or Farmland governance tokens. A small amount (not more than 10%) of this part of the premium might be transformed into Farmland governance tokens and demolished. The remaining amount will turn into the repayment fund pool.

Reimbursement and process: The upper limit of the reimbursement amount for a single contract is 15% of the total reimbursement pool, and the lower limit is the minimum of the loss of the principal amount and 5 times the premium. The determination of compensation needs community voting, and the voters are qualified participants in the compensation pool (that is, participants who have invested more as compared to a specific amount of premiums and are not marked as bad credit).

The amount put into the pool of reimbursement by the voter agreeing to pay out, when it exceeds 4 times the amount paid in the project, the reimbursement is permitted.

Nevertheless, if the amount put into the compensation pool by the voter who does not approve the compensation exceeds 3 times the compensation amount of the project, the compensation cannot be approved. All voters who participate in voting will receive specific rewards.

If the voter or the participant applying for compensation has maliciously defrauded insurance or maliciously failed to pay after later social determination, the voter's address will be marked as bad credit, and once marked as bad credit, a small number of premiums will be seized by the system and that address cannot vote for some time. It has been marked as bad credit several times, and voting rights will be terminated.

The above community autonomy process will be fully achieved on the chain.

III. Governance

The farmland Protocol will be launched online after initial testing and implements. Moreover, Farmland's governance will completely enter the DAO stage after the initial centralization and selection of appropriate farming pools. The agreement is subject to FAR, and any enhancements will be decided by FAR holders' votes. Some of the powers that can be regulated by the governance system are listed as follows:

- Set up a new farming pool and select the appropriate farming protocol.
- Update the oracle address.
- Change the income back-end proportionally.
- Set up a new DAO community.
- Change the liquidation threshold, LTV, liquidation bonus, etc.