Intellectual Property Office

BL O/0965/23

11 October 2023

PATENTS ACT 1977

APPLICANT	AKIVA CAPITAL HOLDINGS INC
ISSUE	Whether patent application GB2115878.7 complies with section 1(2) of the Patents Act 1977
HEARING OFFICER	**Ben Buchanan**

DECISION

Background

1 This decision relates to the issue of whether the application, GB2115878.7, meets the requirements of section 1(2)(c) of the Patents Act 1977 ("the Act").

2 International patent application number PCT/US2020/025776 was filed on the 30th March 2020 in the name of Akiva Capital Holdings Inc. of Ontario, Canada and entered the GB national phase on the 4th November 2021. It was since republished as GB2597181A on the 19th January 2022. The applicant was represented by their attorney Murgitroyd & Company. An International Preliminary Report on Patentability was issued on the 28th September 2021, following a Written Opinion of the International Searching Authority, providing reasoned statements against the novelty and inventive step of some of the claims of the international application.

3 Following allowance of the US equivalent application a request for accelerated examination under the Patent Prosecution Highway, along with amended claims intended to cause the GB application to define the same scope of protection as that found allowable at the United States Patent and Trademark Office (USPTO), was made on the 12th September 2022. This request was allowed and an examination report under section 18 of the Act was issued on the 4th November 2022 raising an objection to the application of excluded matter under section 1(2)(c). The applicant's arguments in response to the report were received on the 7th December 2022.

4 A further examination report was issued on the 20th December 2022 and further arguments and amendments to the claims were received on the 14th April 2023, requesting a hearing in the event that they were not accepted. A letter was issued on the 14th June 2023 restating the examiner's objections to patentability and the application was assigned to me for a hearing on whether or not it was excluded from patentability. Skeleton arguments were provided by the applicant on the 11th July 2023 before the hearing on the 19th July 2023. The hearing was attended by the applicant, Mr Akiva Dubrofsky. His attorney was not present during the hearing and

the arguments he presented largely, but not exclusively, focussed on the allegedly technical aspects of the invention.

5 The compliance period for putting the application in order expires on the 4th November 2023.

The invention

6 The invention relates to automatically conducting a Continuous Forward Rate Agreement (CFRA) in a cryptocurrency using smart contracts. The smart contracts in this case relate to the DAI cryptocurrency and are immutable. This means, for example, that the way an interest rate within the contract is determined cannot be changed. The invention seeks to overcome that immutability by implementing a third type of contract, an obligation contract, which enables first and second (borrower and lender) contracts set up in the CFRA to be implemented despite the immutability of the first and second contracts.

7 The problem is that an immutable smart contract which varies an interest rate (on a loan or investment) in line with an external index cannot be adjusted to implement a fixed interest rate for a fixed term. This means, firstly, that the terms of for example a CFRA cannot be satisfactorily implemented and, secondly, that if pre-conditions for terminating the smart contract (such as amount owed exceeding collateral value) are met, the contract will be terminated early. The claimed invention gets around this by implementing an obligation contract "wrapping" the two smart contracts and adjusting variables within the smart contracts to effectively hold the interest rate constant.

8 The system uses Distributed Ledger Technology (DLT), which is a digital system for recording the transaction of assets in which the transactions and their details are recorded in multiple places at the same time. Blockchain is an example of a distributed ledger system. Distributed ledgers have no central data store or administration functionality.

The claims

9 Claim 1 of the application reads as follows:

A method for automatically conducting a continuous forward rate agreement in a cryptocurrency using smart contracts, the smart contracts implemented by a plurality of nodes of a distributed ledger system, wherein each of the plurality of nodes is a computing device comprising at least one processor, the method comprising:

each of the plurality of nodes identifying a first address for accessing a first smart contract, controlled by a first autonomous Contract Account of the distributed ledger system, the first smart contract having a first borrower address associated therewith, the first smart contract having (i) a owed amount value initially based on an amount of cryptocurrency transferred to the first borrower address, (ii) a collateral value representing a value of collateral object committed to the smart contract associated with the borrower address, (iii) an interest rate query routine that periodically determines a first variable interest rate based at least in part on an extrinsic rate or an intrinsic rate;

each of the plurality of nodes identifying a second address for accessing a second smart contract, controlled by a second autonomous Contract Account of the distributed ledger system, the second smart contract having a first lender address associated therewith, the second smart contract having (i) a lender balance representing a lender amount of cryptocurrency associated with the first lender address, and (ii) a second interest rate query routine that periodically determines a second variable interest rate based at least on the extrinsic rate or the intrinsic rate;

each of the plurality of nodes deploying an obligation object, wherein the obligation object is a smart contract controlled by a third autonomous Contract Account of the distributed ledger system, and wherein deploying the obligation object comprises: receiving a deploy request transaction from an Externally Owned Account; creating the obligation object and determining an address for accessing the obligation object; the obligation object querying the first smart contract at the first address to determine the collateral value; the obligation object updating an internal state to reflect the collateral value in association with the first borrower address; the obligation object querying the second smart contract at the second address to determine the lender balance; the obligation object updating the internal state to reflect lender balance in association with the first lender address; and the obligation object determining a predetermined interest rate associated with the obligation object; and

each of the plurality of nodes executing the obligation object, wherein executing the obligation object comprises: the obligation object receiving at least one first payment transaction associated with the first borrower address; the obligation object receiving at least one second payment transaction associated with the first lender address; the obligation object updating the internal state to update the borrower balance based on at least one first payment transaction and the at least one second payment transaction; detecting a triggering event; and in response to detection of the triggering event, the obligation object executing a subroutine comprising: computing a lender return amount based on the lender balance in the internal state; computing a borrower return amount based on the borrower balance in the internal state; and sending to the distributed ledger system a cryptographically-signed transaction that is cryptographically-signed using a private key of the obligation object, the cryptographically-signed transaction releasing a cryptocurrency based on the lender return amount and the borrower return amount.

10 Whilst there are no problems in construing the claim, the claim relates to complex subject matter and uses specific terminology and so it may be useful to provide a simplified summary of the invention. In simple terms, the invention relates to:

A method of conducting a Continuous Forward Rate Agreement (CFRA) implemented using a distributed ledger system where each part of the distributed ledger system establishes a smart contract associated with a specific borrower;

the rules of the contract used by the borrower are specified; they include owed amount, collateral and interest rate applied, including an interest rate query routine that periodically determines a first variable rate based at least in part on an extrinsic rate or an intrinsic rate;

each part of the distributed ledger system establishes the smart contract associated with a specific lender;

the rules of the contract used by the lender are specified; they include the amount being loaned and interest rate to be applied, including an interest rate query routine that periodically determines a first variable rate based at least in part on the extrinsic rate or the intrinsic rate;

each node sets up an obligation object or "loan token" and gives it an address;

the rules used by the obligation object are specified; these include an interest rate associated with the obligation object based on the collateral and the lender balance;

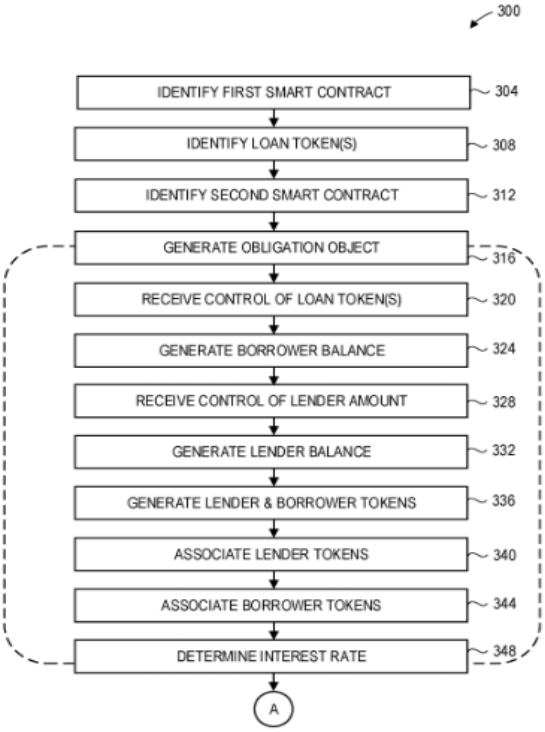
money can be transferred in and out of the obligation object and the obligation object is updated when that happens;

the borrower and lender balance in the obligation object is worked out when a trigger event occurs and the right amount of cryptocurrency is sent to the lender and borrower.

11 Independent claim 20 is for a non-transitory computer readable medium storing computer program code for implementing the method defined in claim 1.

12 The triggering event referred to in the claims may, for example, be detecting that the collateral value is lower than the loan amount presently allocated to the lender, or that a defined term has elapsed.

13 The general flow of the method is shown in figure 3A of the application as filed.



14 The description indicates that "MakerDAO" software is used to implement the agreements using the "DAI" coin system and that it is the Ethereum ® blockchain that is used by the invention.

The law

15 The examiner has deferred consideration of novelty and inventive step under the Act at this time. The only matter that I need to decide upon is whether or not the invention meets the requirements of S1(2)(c) of the Act.

Section 1(2) of the Act is as follows:

> *1(2) It is hereby declared that the following (among other things) are not inventions for the purposes of this Act, that is to say, anything which consists of …*
> *(c) a scheme, rule, or method for performing a mental act, playing a game or doing business, or a program for a computer;*
> *…*
> *but the foregoing provision shall prevent anything from being treated as an invention for the purposes of this Act only to the extent that a patent or application for a patent relates to the that thing as such.*

16 The assessment of patentability under Section 1(2) is governed by the judgment of the Court of Appeal in *Aerotel*[1], as further interpreted by the Court of Appeal in *Symbian*[2]. In *Aerotel* the court reviewed the case law on the interpretation of Section 1(2) and set out a four-step test to decide whether a claimed invention is patentable:

> *(1) Properly construe the claim;*
> *(2) identify the actual contribution;*
> *(3) ask whether it falls solely within the excluded subject matter;*
> *(4) check whether the actual or alleged contribution is actually technical in nature.*

17 The Court of Appeal in *Symbian* made it clear that the four-step test in *Aerotel* was not intended to be a new departure in domestic law; it was confirmed that the test is consistent with the previous requirement set out in case law that the invention must provide a "technical contribution". Paragraph 46 of *Aerotel* states that applying the fourth step of the test may not be necessary because the third step should have covered the question of whether the contribution is technical in nature. It was further confirmed in *Symbian* that the question of whether the invention makes a technical contribution can take place at step 3 or 4.

18 Lewison J (as he then was) in *AT&T/CVON*[3] set out five signposts that he considered to be helpful when considering whether a computer program makes a technical contribution. In *HTC/Apple*[4] the signposts were reformulated slightly in light of the decision in *Gemstar*. The signposts are:

> *i) whether the claimed technical effect has a technical effect on a process which is carried on outside the computer*
> *ii) whether the claimed technical effect operates at the level of the architecture*

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[1] Aerotel Ltd v Telco Holdings Ltd & Ors Rev 1 [2007] RPC 7
[2] Symbian Ltd's Application [2009] RPC 1
[3] AT&T Knowledge Ventures/Cvon Innovations v Comptroller General of Patents [2009] EWHC 343 (Pat)
[4] HTC Europe Co Ltd v Apple Inc [2013] RPC 30

of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run
iii) whether the claimed technical effect results in the computer being made to operate in a new way
iv) whether the program makes the computer a better computer in the sense of running more efficiently and effectively as a computer
v) whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented

Arguments

19 In his skeleton arguments, and reiterated at the hearing, Mr Dubrofsky specifically asked me to disregard his attorney's previous arguments in respect of the technical nature of the claims. This presents me with the difficulty that in the absence of these arguments, the legal basis for Mr Dubrofsky's own arguments is unclear. His comments at the hearing were limited to how the invention works and why it is technical but did not refer to the *Aerotel* test, the *AT&T* signposts, or any other precedent. He merely asserted that it was technical and not a business method.

20 In order to fully and fairly consider the merits of the application under the law I am required to apply, I will need to consider the legal arguments provided by Mr Dubrofsky's attorney in their letters and also the technical arguments provided by Mr Dubrofsky in the hearing. I will take this opportunity to thank Mr Dubrofsky for his explanation of the claimed invention, how it works and how it differs from the prior art. These comments were enormously helpful.

Step 1 – construe the claim

21 There are no problems in construing the claim and so the first step of the *Aerotel* tests causes no problems. The claim and its meaning are set out above.

Step 2 – identify the actual contribution

22 As the attorney noted in their letter of the 7th December 2022, when identifying the contribution, the whole of the claim and the way the components interact with each other must be considered. Birss J, in *Lenovo*[5] at paragraph 16, summarised matters as *"invention can lie in a new combination of old features and so, while identifying an individual feature as disclosed in prior art is a relevant thing to do, it will always be necessary to consider it in the context of the invention as a whole before reaching a conclusion."* In *Lantana*[6], Kitchin LJ set out the importance of considering the proper context of an invention when assessing the contribution, accepting *"[a] submission that it is the claim as a whole which must be considered when assessing the contribution which the invention has made, and that it is not permissible simply to cut the claim into pieces and then consider those pieces separately and without regard to the way they interact with each other"*.

[5] Lenovo (Singapore) PTE Ltd v Comptroller General of Patents [2020] EWHC 1706 (Pat)
[6] Lantana v Comptroller-General of Patents [2014] EWCA Civ 1463 paragraph 64

23 Jacob LJ outlined the considerations to be applied when identifying the contribution made by the claims in paragraph 43 of *Aerotel*; the critical factors for the examiner to consider are emphasised:

> *"The second step – identify the contribution - is said to be more problematical. How do you assess the contribution? Mr Birss submits the test is workable – it is an exercise in judgment probably involving the problem said to be solved, how the invention works, what its advantages are. What has the inventor really added to human knowledge perhaps best sums up the exercise. The formulation involves looking at substance not form – which is surely what the legislator intended."*

24 Mr Dubrofsky's rationale as to why the claimed invention is technical is summarised in his skeleton arguments filed on the 11th July 2023. These arguments formed the main focus of the hearing and greatly aided the understanding of the contribution proved by the claimed invention. Mr Dubrofsky's arguments can be summarised as follows:

> *Maker Decentralised Autonomous Organisation (DAO) (MakerDAO) has the goal of creating a stable coin called a DAI which is a bearer asset (referred to as "holder" asset in the specification of the application). The bearer (i.e. decentralised) nature of DAI is the sole objective of using DAI. To achieve this, the DAI must be non-lockable, that is, the DAI cannot be locked or frozen.*
>
> *DAI savings are a mechanism, such as a smart contract, implemented in the DAI cryptocurrency.*
>
> *In order to implement a Continuous Forward Rate Agreement, there must be a fixed rate, which in turn requires a fixed term. This requires locking of the of the coins for the fixed term. If the coins cannot be locked, then they cannot be used for fixed interest rate agreements or CFRAs.*
>
> *There is therefore a contradiction between the immutability needed to carry out the agreement and the inherent non-lockable nature of the DAI.*
>
> *Once smart contract software applications are deployed, they may be very difficult to change. The MakerDAO smart contracts were intended to be highly immutable when MakerDAO was deployed. The solution provided by the claimed invention enables the implementation of a CFRA in the non-lockable DAI without requiring the redeployment of the entire MakerDAO application which is used to implement agreements.*
>
> *It does this by providing an obligation object that is unlocked and controlled by a third party. The obligation object provides a third smart contract which effectively "patches" the first and second (borrower and lender) contracts used in the agreement and so does not require redeployment of the MakerDAO source code.*

25 In their letter of the 14th April 2023, the attorney stated:

The contribution of the claimed invention is a new technique for transferring information between blockchain-based accounts, and for controlling the transfer of said information between said accounts. A new and specific arrangement of smart contracts, controlled by contract accounts, containing new smart contract code is provided for the purpose of transferring and controlling the transfer of information.

26 In the hearing Mr Dubrofsky stated that the contribution provides three aspects:

- *Improved security, reliability and trustworthiness due to blockchain implementation*
- *Ability to implement a CFRA despite the immutability of smart contracts*
- *Provision of a "patch" as opposed to redeployment, avoiding cost, (down)time and disruption*

The contribution

27 The invention therefore provides a means of upgrading immutable contracts which cannot otherwise be upgraded. The examiner's reports do not appear to have specifically addressed this aspect of the invention and I accept that this feature underpins the contribution. I think in fairness to Mr Dubrofsky it is appropriate to use his three point summary as the basis for the contribution, and to ensure that it reflects the context of the claimed invention as a whole and includes the advantages put forward by his attorney. Consequently, I define the contribution as follows:

Using a software patch to automatically conduct a continuous forward rate (CFRA) agreement in a cryptocurrency using smart contracts within a blockchain system by identifying first and second smart contracts including value, collateral, balance and a variable interest rate; and a third "obligation" smart contract which "wraps" and thereby interacts with the first and second smart contracts and (a) defines a predetermined interest rate; when the obligation contract is executed, updating its internal state to reflect payment transactions and (b) in response to a triggering event, executes a cryptographically-signed transaction that releases a cryptocurrency to prevent a smart contract terminating early; providing the advantages of:

- *Improved security, reliability and trustworthiness due to blockchain implementation*
- *Ability to implement a CFRA despite the immutability of smart contracts*
- *Avoiding cost, (down)time and disruption by using a software patch as opposed to redeployment of code.*

28 In formulating this contribution I have limited its effect to conducting a CFRA as claimed. In contrast, some of the attorney's historic assertions imply a wider general effect. I have found no support for such a general improvement in the application, much less the scope of the claims.

Steps 3 & 4 – does the contribution fall solely within the excluded subject matter? Is it technical in nature?

29 Here I must determine whether or not the contribution falls solely within an excluded field, and whether it is technical in nature. As I stated previously, Mr Dubrofsky has asked me to disregard his attorney's previous comments in respect of the technical nature of the claims, however, he has not instead clearly presented a new argument under the relevant law. Consequently, I will consider the arguments presented to date where not superseded, but will, as requested, favour the Mr Dubrofsky's comments when appropriate. Once I have considered the relevant arguments, I will analyse whether the contribution falls wholly within the field of a method for doing business and/or a program for a computer as such.

The attorney's arguments

30 Mr Dubrofsky's attorney argued, in their letter of the 7th December 2022, that the invention provides a more secure distributed ledger system. They assert an improvement in a technological field (cryptographically-signed transactions performed using networked computers) by using three smart contracts in a blockchain environment. As a result, in-built immutability is overcome and a CFRA can be implemented. This, they allege, is a solution to *"a technical problem (e.g. preventing an autonomous smart contract, which is programmed to terminate when certain conditions occur, from terminating prematurely and unnecessarily, through the use of a third smart contract)"*. They further argue that the invention meets *AT&T* signposts (ii) and (iv) in that

> *the claimed invention provides a solution to a technical problem imposed by the autonomous operation of a first smart contract (i.e. the inflexibility of the first smart contract's programming once it is deployed) through the use of an additional smart contract and that the claims recite various steps that operate at the level of the computer architecture, for example "executing a subroutine in response to a triggering event".*

They go on to state that *the claimed method provides a more secure computer (i.e. a distributed ledger system comprising a plurality of nodes which use cryptographically-derived addresses)*. I will consider the *AT&T* signposts further below.

31 In their letter dated 14th April 2023 they also state that signpost (v) is satisfied because

> *The claimed invention solves the technical problem of how to provide a more secure, reliable and trustworthy CFRA. Here, security, reliability and trustworthiness refer to the transfer and control of the data that is used as part of the CFRA. The claimed invention ensures that the data (e.g. lender balance, lender return amount, borrower balance, borrower return amount, etc.) is reliably computed and cannot be manipulated. In other words, the claimed invention guarantees the integrity of the data used as part of the CFRA. Repeating a point made above, whilst the data itself has a financial/business nature, data security and integrity has a technical nature.*

32 In summary, the attorney's arguments assert benefits to automation, security and fraud-prevention through the use of blockchain. These are combined with financial processes to accommodate fiscal fluctuations which would otherwise result in an

unfixed interest rate or premature termination, without the need for human intervention. As a result, a CFRA can be implemented in a decentralised currency.

33 In the hearing, and as set out above, Mr Dubrofsky concentrated on what he summed up as the *juxtaposition of the obligation contract to the smart contract, which is the patch.* The arguments posed by My Dubrofsky in the skeleton arguments and at the hearing raised two significant questions when considering the contribution made by the invention:

- *Is the upgrading of immutable applications which cannot be otherwise upgraded due to their highly immutable nature a technical problem?*
- *Is a patch that prevents an application from having to be redeployed a technical solution?*

34 I will address these questions in my analysis below.

Analysis

Method for doing Business

35 The examiner has noted that the benefits of the claimed invention include the ability to transact via smart contracts which the application states is able to enhance security, reliability and trustworthiness, not least due to a reduced need for human administration. These benefits are expressed in paragraphs 88-90 of the application as filed and have also been asserted by the attorney in their arguments. This enhanced security, reliability and trustworthiness is stated to be part of the contribution made by the invention. However, all of these benefits are inherent benefits of using blockchain technology, as noted in paragraph 88 of the application. In this regard I agree with the arguments made by the examiner in their letter of the 20th December 2022. The contribution of the invention therefore cannot simply be the general enhanced security, reliability and trustworthiness of the process since this is a standard feature of using blockchain. In other words, the blockchain itself is not better, but the CFRA implemented by it is.

36 In *Halliburton*[7], HHJ Birss QC at paragraph 35 noted that the use of a computer to implement a better business method did not confer patentability:

> *"The business method cases can be tricky to analyse by just asking whether the invention has a technical effect or makes a technical contribution. The reason is that computers are self evidently technical in nature. Thus when a business method is implemented on a computer, the patentee has a rich vein of arguments to deploy in seeking to contend that his invention gives rise to a technical effect or makes a technical contribution. For example the computer is said to be a faster, more efficient computerized book keeper than before and surely, says the patentee, that is a technical effect or technical advance. And so it is, in a way, but the law has resolutely sought to hold the line at excluding such things from patents."*

[7] Halliburton Energy Services Inc's Applications [2012] RPC 129

37 It seems to me that a better CFRA is a better business method and would fall wholly within the exclusion. The second part of the attorney's argument is that data security and integrity is technical in nature. That may sometimes be true, but here it is limited to the implementation of a CFRA. To return to paragraph 43 of *Aerotel* quoted above, *What has the inventor really added to human knowledge?* There is no improvement to data security and integrity per se; the blockchain itself is conventional. The improvement is to the implementation of a CFRA by using a third smart contract in a blockchain as a wrapper. This is clever, but it is not indicative of a more secure protocol. It is not a general advantage to data security and integrity and as such is a contribution only to the implemented CFRA, itself within an excluded field. I do not believe that what has been added is technical in nature; it is merely the clever application of a conventional blockchain, with resultant advantages, to a business method.

38 I will add here, as I have hinted above, that in finding that the contribution lies wholly within the field of a method for doing business, I do not believe that there is provided a contribution of security, reliability or trustworthiness of a more general nature as no such assertion would seem to be supported by the specification.

Program for a computer

39 Turning to the first of Mr Dubrofsky's questions, the immutable nature of the smart contract application is a feature of the MakerDAO source code and, since upgrading such applications is a problem that arises due to the particular software implementation used, the problem would appear to lie within the field of endeavour of computer programming and so not to be technical in the sense required under UK law. As such, addressing immutability by means of another computer program application would not seem to be technical, as inventions in this field are specifically excluded from patent protection. Since I am bound to follow the Act and precedent case law, I must conclude that it is not a technical problem. I am sympathetic to deep specialists in software engineering considering their activities technical, and in a sense they are, however the law excludes a program for a computer *as such* from patentability. Whether such a program can nonetheless provide a technical effect when put into operation will be considered when I assess the *AT&T* signposts below.

40 Moving to the second of these questions, the patch in this instance is a way of avoiding the labour, cost and disruption of redeployment of the software. Once again, we need to ask whether or not there are technical advantages arising from the proposed solution. Once more it can be seen that the problems arise due to the source code used to implement the application system. The benefits of the solution in this instance amount to saving time, labour and cost which are expected advantages of a better computer program. In fact, the task of redeploying software may itself be considered to be a method for doing business, as it is essentially an administrative function (involving time, labour and cost), and so to be excluded. I must therefore conclude that using a patch to prevent redeployment of an application is not itself a technical solution.

41 Notwithstanding my findings above, in assessing whether the contribution provides a technical effect such that it is more than a program for a computer, I will consider the *AT&T* signposts in turn. I note here that they are indicative, not determinative, but that in light of my findings so far, in the absence of their assisting the applicant they

would seem to contraindicate patentability. The attorney has only drawn analogy with three of the signposts, but I will briefly consider them all:

Signpost (i): does the claimed technical effect have a technical effect on a process which is carried on outside the computer?

42 I do not consider this to be the case. The only effects outside the computer fall within the field of a method for doing business. The advantages to a CFRA using smart contracts implemented on blockchain lie within this field, as do the benefits of not having to redeploy an application by using a patch. Any effect arising from the contribution outside the computer is therefore not technical. There is a suggestion in the attorney's letter of the 7th December 2022 on page 2 at paragraph 4 that the arrangement of hardware may form part of the contribution. I have not found that to be the case, nor have I found any support in the specification for such an assertion. Consequently, I do not consider there to be a technical effect on any hardware within or outside the network.

Signpost (ii): does the claimed technical effect operate at the level of the architecture of the computer; that is to say, whether the effect is produced irrespective of the data being processed or the applications being run?

43 The attorney argued that this signpost is met, for example by virtue of the execution of a subroutine in response to a triggering event. I do not agree with this position. *AT&T* signpost (ii) requires that *the effect is produced irrespective of the data being processed or the applications being run.* This is clearly not the case here as the claimed invention relates specifically to financial data in conjunction with a CFRA. The purpose of the claimed invention is that it provides a "patch" to the previously deployed software to allow the MakerDAO software to operate in a different way. This takes place at the application layer. Executing a software subroutine within the obligation contract object has no effect at the architectural level of the computer and I can see no effect at the level of the computer architecture in the application as a whole.

Signpost (iii): does the claimed technical effect result in the computer being made to operate in a new way?

44 There is no suggestion that this is the case. The computer operates conventionally under the specific control of an application layer program. This signpost does not assist the applicant.

Signpost (iv): does the program make the computer a better computer in the sense of running more efficiently and effectively as a computer?

45 The attorney's letter of the 7th December 2022 argues that the computer is a better computer because it is more secure. As discussed above, the benefits to the security, reliability and trustworthiness of the system apply to the CFRA and arise from the use of blockchain. They do not apply to the computer as a whole. This signpost does not assist the applicant.

Signpost (v): is the perceived problem overcome by the claimed invention as opposed to merely being circumvented?

46 In their letter of 14th April 2023, the attorney argued that signpost (v) at least is met by solving the problem of how to provide a more secure, reliable and trustworthy CFRA. As above, I consider this a problem which lies within the field of business. If it is not a technical problem, the invention cannot derive any technical character from it, no matter whether it is overcome or circumvented. The attorney goes on to say that whilst the data itself has a business/financial nature, data security and integrity has a technical nature. I have addressed this point above and found that the contribution to data security and integrity is not general and applies only to the implementation of a CFRA. No general problem of data security and integrity is solved; only insofar as it concerns a CFRA. The problem, and its solution are therefore not technical. As noted previously, the invention patches existing software. It therefore arguably circumvents the problems inherent in the software by providing a third observation contract to wrap the first and second smart contracts rather than overcoming the problems with implementing a CFRA using the first and second contracts directly. The invention also circumvents the need to redeploy software, and does not address a technical problem at that level. This signpost does not assist the applicant.

47 None of the *AT&T* signposts indicate a technical contribution. Having considered the arguments on file and made at the hearing, I have found that the contribution relates solely to a method for doing business and a program for a computer. I must therefore conclude that the invention falls entirely within the excluded areas set out in S1(2)(c) of the Act.

48 During the hearing Mr Dubrofsky noted that the existing methods of implementing agreements using the Ethereum ® blockchain provided limited ability to upgrade contracts once deployed. He explained that the core DAI contract is unbiased, that is, it cannot be locked. Providing a fixed term contract requires locking of the DAI. This gives rise to the “immutability” problem previously noted above. This problem is not a problem that is technical in nature; that is to say it is not constrained by the abilities of the computer or by the laws of physics as such, but rather is limited by the software used to implement the system. The patch provided by the invention prevents the need for redeployment of software, which would otherwise require time, money and effort. The patch does this by changing lines of code and wrapping existing features. In this instance the change relates to software used to implement a business method. So neither the solution nor the contribution is technical in nature.

Alternative formulation of the claims

49 At the hearing Mr Dubrofsky suggested several possible ways to amend the application. One of these was specifying features of the claims that might help to tie the invention to physical properties of the system, such as the arrangement of the nodes and their “physical immutability” in addition to what he referred to as the “situational immutability” of the software design pattern (i.e. the smart contracts). This is, to a certain extent, already specified in the claims and amending this aspect of the claims would have no impact on my assessment of the substantive invention as it does not materially change the facts relating to the contribution of the invention. Similarly, the incorporation of specific reference to MakerDAO and DAI would relate only to specific proprietary implementations and inclusion within the claims would not change my assessment of the contribution made by the invention and whether or not it is technical. Defining the claims by reference to characteristics reliant upon factors

which are subject to external change, such as MakerDAO and DAI, would also mean that the claims may be indeterminate in scope. None of the proposed amendments would therefore change my assessment or offer a way forward.

50 I therefore find that the invention is excluded under S1(2)(c) of the Act as a program for a computer and/or a method for doing business as such. The application is refused under section 18(3).

Appeal

51 Any appeal must be lodged within 28 days after the date of this decision.

BEN BUCHANAN

Deputy Director, acting for the Comptroller