

## COINSPARK ASSET ISSUE AGREEMENT

### ISSUE DETAILS

Variable Name	Value	Explanation
CoinSpark Asset	<b>Alex Batlin</b>	Full display name of the CoinSpark Asset.
Issuer	<b>Alex Batlin</b>	Legal name of the issuer.
Issuer Address	<b>NA - test</b>	Registered address of the Issuer.
Issuer Website	<b>http://www.batlin.com</b>	The website of the Issuer.
Asset URL	<b>http://www.batlin.com/coinspark/dev-contract-test/</b>	The location of the Asset Web Page on the Issuer website
Underlying Asset	<b>Crypto 2.0 Role - Test i.e. not real</b>	Description of the underlying asset corresponding to the CoinSpark Asset.
Total CoinSpark Asset Units	<b>1</b>	Total number of units of the CoinSpark Asset created.
Value per Unit	<b>6 Month Contract</b>	The quantity of the Underlying Asset which may be exchanged per unit of CoinSpark Asset during a Redemption, prior to applying the Interest Rate.
Redemption Confirmations	<b>6 (approximately 1 hour)</b>	Number of Blocks in the Longest Blockchain after the Redemption Transaction required for the Issuer to complete the Redemption.
Issue Date	<b>12 April 2015, 8:18 am</b>	Date and time when the CoinSpark Asset was created.
Expiry Date	<b>12 May 2015, 8:18 am</b>	Date and time when the CoinSpark Asset will cease to be valid.
Interest Rate	<b>0%</b>	Annual increase or decrease (if negative) in value of CoinSpark Asset.
Time Zone	<b>UTC</b>	Time zone in which Issue Date and Expiry Date should be interpreted.
Asset Holder Country of Residence	<b>N/A</b>	The country in which the Asset Holder must be resident to perform a Redemption.
Prohibited Territories	<b>N/A</b>	Countries where due to export rules, it is forbidden to send the CoinSpark Asset.
Transaction Charge	<b>No charge</b>	Cost of sending the CoinSpark Asset from one Asset Holder to another (does not include any bitcoin transaction fees).
Governing Law	<b>English law</b>	Any dispute arising shall be determined in accordance with the law of this jurisdiction.

## TECHNICAL DETAILS

Variable Name	Value	Explanation
Genesis Spent Transaction ID	<b>d62a894d4204d49400a68da0ff133b81fc153458108de3922477716d59190a1f</b>	TxID of a bitcoin transaction, one of whose outputs was spent by the first input of the Genesis Transaction in which the asset was created.
Genesis Spent Output Index	<b>4</b>	Zero-based index of the output of the Genesis Spent Transaction ID which was spent by the first input of the Genesis Transaction.
Total Raw Units	<b>1</b>	Total number of Raw Units created in outputs of Genesis Transaction.
Raw Unit Multiple	<b>1</b>	Number of units of Coinspark Asset per Raw Unit, prior to applying the Interest Rate.
Protocol Version	<b>v1.0</b>	Version number of the CoinSpark protocol which will govern the asset's movements
Reference Implementation Download URL	<b><a href="http://coinspark.org/coinspark-reference-1.0.zip">http://coinspark.org/coinspark-reference-1.0.zip</a></b>	URL of the reference implementation for this version of the protocol.
Reference Implementation Checksum	<b>a4bf29647a3c2e6883eab904d2cf1421ee04c847db9dc7562a007e8df218167a</b>	SHA-256 digital signature of the protocol reference implementation file.

## TERMS AND CONDITIONS

### Background:

These Terms and Conditions set out the terms and condition under which the Issuer guarantees that the CoinSpark Asset may be redeemed by the Asset Holder in exchange for the Underlying Asset.

**THE PARTIES AGREE** as follows:

### 1. DEFINITIONS AND INTERPRETATION

- 1.1 All capitalised terms that are variables, the values or meanings of which are specified in the preceding Issue Details or Technical Details forms, shall bear those values or meanings in these Terms and Conditions.
- 1.2 In addition, the following definitions and rules of interpretation in this clause apply in these Terms and Conditions. Technical terms used predominantly in the Technical Schedule are defined in the Technical Schedule but shall also apply here.

**Asset Holder:** an owner of the CoinSpark Asset as further described in clause 3.2.

**Asset Web Page:** the page on the World Wide Web representing a CoinSpark Asset at the Asset URL, which may be provided in the Issue Details and/or calculated according to the method defined in the Technical Schedule.

**Bitcoin Private Key:** a cryptographic key used by the Bitcoin Protocol, access to which is required in order to spend Bitcoin.

**Bitcoin Transaction:** the spending of Bitcoin in accordance with the Bitcoin Protocol.

**Block:** a unit of storage used by the Bitcoin Protocol to confirm a collection of Bitcoin Transactions that have been carried out.

**Blockchain:** a chain of Blocks used by the Bitcoin Protocol to store a particular history of Bitcoin Transactions. Each Block in a Blockchain is numbered sequentially, beginning with zero, and linked to the previous Block in a chain-like structure.

**Business Day:** a day other than a Saturday, Sunday or public holiday in the country of the Issuer Address.

**CoinSpark Wallet:** an offline or online piece of software which is able to receive, store and send CoinSpark Assets in accordance with the CoinSpark Protocol.

**Expert Procedure:** the procedure referred to in clause 16.

**Longest Blockchain:** a Valid Blockchain which contains more Blocks than any other Valid Blockchain and is therefore considered authoritative by the Network Majority.

**Network Majority:** at least half of the nodes in the Bitcoin Network.

**Redemption:** the process in which the Asset Holder sends the CoinSpark Asset to the Issuer and receives the Underlying Asset in exchange.

**Redemption Transaction:** a Bitcoin Transaction in which the Asset Holder transfers the CoinSpark Asset to the Issuer, in order to perform Redemption.

**Term:** the period of time from the Issue Date to the Expiry Date in the Time Zone.

**Valid Blockchain:** a Blockchain which is accepted by the Network Majority.

- 1.3 In these Terms and Conditions references to persons shall include firms, companies and other organisations; a reference to a statutory provision includes a reference to the same as modified, re-enacted or replaced from time to time and any subordinate legislation made under it; a reference to a legal or regulatory body includes a reference to any successor body or bodies to it; headings shall not affect the interpretation of these Terms and Conditions; reference to clauses, paragraphs or Schedules are to clauses and schedules of these Terms and Conditions; the words "include", "includes", "including" and "in particular" shall be construed as if they were followed by the words "without limitation" and a reference to these Terms and Conditions shall include its Schedules. Except as expressly provided in these Terms and Conditions, the rights and remedies provided under these Terms and Conditions are in addition to, and not exclusive of, any other rights or remedies, whether under these Terms and Conditions or provided by law.

## **2. ACCEPTANCE**

- 2.1 These Terms and Conditions are applicable to all transactions involving the CoinSpark Asset and any use, transfer or purchase of the CoinSpark Asset shall constitute acceptance of these Terms and Conditions.

## **3. GUARANTEE OF COINSPARK ASSET**

- 3.1 During the Term the Issuer hereby guarantees that the CoinSpark Asset may be redeemed by the Asset Holder in exchange for the Underlying Asset from the Issuer, provided that the Issuer shall not be required to allow redemption of the CoinSpark Asset by an Asset Holder in any of the Prohibited Territories.

- 3.2 The Asset Holder shall be whoever has possession of the Bitcoin Private Key which enables the Bitcoin Transaction Output holding the CoinSpark Asset, as determined in the Technical Schedule, to be spent in a new Bitcoin Transaction, and where that Bitcoin Transaction Output has not been spent by any other Bitcoin Transaction visible to any node in the Bitcoin Network. For the avoidance of doubt, if more than one individual has possession of a Bitcoin Private Key then all such individuals shall be Asset Holders.

## **4. OWNERSHIP AND RISK**

- 4.1 The transfer of the CoinSpark Asset from the Issuer to the Asset Holder or from one Asset Holder to a new Asset Holder will be deemed to have occurred so long as the Bitcoin Transaction which performs that transfer appears in the Longest Blockchain.

- 4.2 If a CoinSpark Asset has no Asset Holder as set out in clauses 3.1 and 3.2 then the Issuer shall be considered the sole legal owner of the CoinSpark Asset.

4.3 The CoinSpark Asset shall be held at the risk of the Asset Holder from the time that the Asset Holder gains possession of the CoinSpark Asset until such time as the Asset Holder transfers that CoinSpark Asset to another Asset Holder.

4.4 Individuals who have gained access to a Bitcoin Private Key in relation to a CoinSpark Asset by unlawful means shall not be entitled to redeem or spend the CoinSpark asset.

## **5. REDEMING COINSPARK ASSETS**

5.1 In order to redeem a CoinSpark Asset, an Asset Holder must complete the process which is described and/or linked to on the Asset Web Page.

5.2 In the event that the Asset Web Page does not describe the Redemption process, or the process is not available for completion for a period of 14 days or longer, Redemption shall take place according to the following protocol:

5.2.1 The Asset Holder may send a written notice to the Issuer with a request to redeem a CoinSpark Asset, and which includes the address or bank account (as appropriate) to which the corresponding Underlying Asset should be sent.

5.2.2 Within 7 days of receipt of such notice, the Issuer shall send a written notice to the Asset Holder acknowledging the Redemption request and which details (a) the CoinSpark Address to which the Asset Holder shall send the CoinSpark Asset in order to redeem the Underlying Asset, (b) the number of days after receipt of the CoinSpark Asset in which the Issuer will send the Underlying Asset to the Asset Holder, and (c) any further details in relation to the method in which the Underlying Asset will be sent to the Asset Holder.

5.2.3 The Asset Holder shall send the CoinSpark Asset to the CoinSpark Address provided by the Issuer, in a Redemption Transaction in accordance with the CoinSpark Protocol.

5.2.4 The Issuer shall be entitled to wait until the Longest Blockchain contains the Redemption Transaction and an additional number of subsequent Blocks as specified by the Redemption Confirmations.

5.2.5 Within 7 days of the prior condition being fulfilled, and so long as the Redemption Transaction remains in the Longest Blockchain during those 7 days, the Issuer shall send the Underlying Asset to the Asset Holder in accordance with the details provided by the Asset Holder above.

5.3 CoinSpark Assets cannot be redeemed for anything else other than the Underlying Asset.

5.4 For the purposes of redeeming a CoinSpark Asset, the Issuer is obliged to complete the asset redemption process so long as the Asset Holder completed the first step described in 5.1 or 5.2 during the Term of the CoinSpark Asset.

## **6. TRANSACTION CHARGE AND INTEREST RATE**

6.1 Each time the CoinSpark Asset is transferred from one Asset Holder to a new Asset Holder the quantity of the CoinSpark Asset shall be reduced in accordance with the Transaction Charge.

6.2 Beginning immediately as of the Issue Date, the quantity of the Underlying Asset corresponding to the CoinSpark Asset shall increase or decrease each minute by a proportion which compounds to the Interest Rate on a yearly basis, where a year is defined as containing 525,960 minutes (365.25 days). When performing a Redemption, the Issuer shall be permitted to round down the quantity of the Underlying Asset to the closest whole multiple of the Raw Unit Multiple.

## **7. RESTRICTIONS ON THE USE OF COINSPARK ASSETS**

7.1 The Asset Holder shall not reverse engineer the systems, passwords, encryptions or software used in connection with these Terms and Conditions, whether such systems, passwords, encryptions or software belong to the Issuer or are related in any way to the Bitcoin Protocol, CoinSpark Protocol or Bitcoin Network.

7.2 In order to redeem a CoinSpark Asset from the Issuer, the Asset Holder must be resident in the Asset Holder Country of Residence, if specified.

## **8. ISSUER TECHNICAL RESPONSIBILITIES**

8.1 The Issuer shall maintain the Asset Web Page at the Asset URL on the Issuer Website throughout the Term and for a period of one year thereafter, to the same standards of availability and security as the home page of the Issuer Website. The Asset Web Page shall provide information about the asset in a predefined form which is readable by CoinSpark Wallets, as outlined in the Technical Schedule.

8.2 During the Term the Issuer shall provide at least one Asset Tracking Server (either directly or via a third party) which calculates the Raw Quantity of the CoinSpark Asset in every Bitcoin Transaction Output of every Bitcoin Transaction which (a) is visible to Bitcoin Core running on the open Internet, whether in a Blockchain or not, and (b) has not been spent by another Bitcoin Transaction visible to Bitcoin Core running on the open Internet. The Asset Tracking Server shall respond in a timely and accurate fashion to queries from CoinSpark Wallets regarding the Raw Quantity of the CoinSpark Asset in a particular Bitcoin Transaction Output, where the format of such queries and their responses are outlined in the Technical Schedule. These queries shall be answered at no charge and without limitation, subject to reasonable constraints on abusive or mistaken querying. The address or addresses of the Asset Tracking Server shall be provided on the Asset Web Page in accordance with the Technical Schedule.

## **9. ISSUER DEFAULT**

9.1 A default shall occur when:

9.1.1 the Issuer fails to fulfil the technical requirements outlined in the previous section for a consecutive period of 14 days or more;

9.1.2 the Issuer fails to provide the Underlying Asset when an Asset Holder redeems a CoinSpark Asset;

9.1.3 it becomes unlawful for the Issuer to perform or comply with any of its obligations under these Terms and Conditions; or

9.1.4 the Issuer (a) becomes unable to pay its debts as they fall due within the meaning given by Section 123 of the UK Insolvency Act 1986; (b) enters into liquidation (otherwise than for the purpose of a scheme of solvent amalgamation or reconstruction where the resulting entity is at least as credit worthy as the

other party and assumes all the obligations of the other party under these Terms and Conditions); (c) makes an arrangement with its creditors; (d) has a liquidator, receiver or administrative receiver appointed over all or any of its assets; (e) ceases or threatens to cease trading or is dissolved; or (f) is subject to any procedure equivalent to any of the preceding matters in any jurisdiction outside England, (each a **Default**).

## **10. CONSEQUENCES OF DEFAULT**

On a Default event all the Underlying Assets in respect of the CoinSpark Assets issued by the Issuer shall become due and payable to the Asset Holders.

## **11. LIMITATION OF LIABILITY**

- 11.1 All warranties, clauses and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from these Terms and Conditions.
- 11.2 Notwithstanding any provision to the contrary in these Terms and Conditions, nothing in these Terms and Conditions shall exclude or limit the liability of the Issuer for death or personal injury caused by the Issuer's negligence or for fraudulent misrepresentation or for any liability that may not be limited or excluded by law.
- 11.3 The Issuer shall not be liable for any losses that the Asset Holder suffers from purchasing and/or transferring CoinSpark Assets (without prejudice to the Issuer's obligations to honour its promise to redeem the CoinSpark Assets).
- 11.4 The Issuer shall not be liable for any change in value of the Underlying Asset.
- 11.5 The Issuer shall not be responsible for any loss of CoinSpark Assets by the Asset Holder once they have been transferred or purchased.

## **12. COMPLIANCE WITH LAW**

- 12.1 Both the Issuer and the Asset Holder agree to comply with all applicable laws and regulations relating to dealings and transactions in connection with CoinSpark Assets.
- 12.2 To the extent that the Issuer collects personal information in connection with these Terms and Conditions in relation to individuals, the Issuer shall at all times process that information in accordance with all applicable laws and regulations, including, where applicable, the European Data Protection Directive or any legislation for the protection of personal information in any other jurisdiction that has a similar or equivalent effect.

## **13. TAXES**

- 13.1 It is the responsibility of each party to determine whether, and to what extent, any taxes apply to any transactions associated with CoinSpark Assets and/or the transactions contemplated by these Terms and Conditions, and to withhold, collect, report and remit the correct amounts of taxes to the appropriate tax authorities.

## **14. SECURITY**

14.1 Both the Issuer and the Asset Holder shall hold any CoinSpark Asset in its possession in a secure CoinSpark Wallet whose Bitcoin Private Keys are stored on disk only in encrypted form.

14.2 The Asset Holder shall ensure any physical hardware it uses to store the CoinSpark Asset shall be adequately secured against unauthorized access, theft or damage.

## **15. TRANSFER**

15.1 The Asset Holder may transfer the CoinSpark Asset it owns to another individual without consent from the Issuer.

15.2 The Asset Holder's rights and obligations under these Terms and Conditions are assigned to and accepted by the new Asset Holder on transfer of the CoinSpark Asset.

15.3 The Asset Holder shall be prohibited from knowingly transferring the CoinSpark Asset to an Asset Holder in the Prohibited Territories.

## **16. DISPUTES**

16.1 Both the Issuer and the Asset Holder are committed to resolving all CoinSpark Asset related disputes arising under these Terms and Conditions (whether such dispute arises before or after termination of these Terms and Conditions) without the need for litigation. Therefore the parties:

16.1.1 will attempt in good faith to resolve any dispute or claim promptly through negotiations between the parties; and

16.1.2 will, if the matter is not resolved through negotiation within 30 days of the dispute arising have the right to invoke the provisions of clause 17.

## **17. ARBITRATION**

If a dispute arising out of or in connection with these Terms and Conditions cannot be resolved under clause 16, the dispute shall be referred to and finally resolved by arbitration in accordance with the London Court of International Arbitration (LCIA) Rules. The arbitral tribunal shall consist of a sole arbitrator. The place of arbitration shall be London, England. The language to be used in the arbitral proceedings shall be English. The dispute or difference referred to arbitration shall be decided in accordance with the Governing Law set out in the Issue Details, or failing such details being specified, with English law.

## **18. NOTIFICATIONS**

Any notifications to the Asset Holder from the Issuer may be placed on the Asset Web Page. Any notice from the Asset Holder to the Issuer shall be sent in writing to the Issuer at their Registered Address, as that address may be updated from time to time on the Issuer Website.

## **19. GOVERNING LAW**

These Terms and Conditions and any dispute or claim arising out of or in connection with it or its subject matter or formation (including non-contractual disputes or claims) shall be governed by and construed in accordance with the Governing Law set out in the Issue Details, or failing such details being specified, with English law.



## TECHNICAL SCHEDULE

### DEFINITIONS

All terms defined previously shall apply to this Technical Schedule. The following definitions shall also apply:

**Asset Quantity:** a quantity of the Underlying Asset which is calculated from the Raw Quantity according to the process set out in this Technical Schedule.

**Asset Tracking Server:** a server on the open Internet provided by the Issuer which calculates Raw Quantities in Bitcoin Transaction Outputs and which may be queried by CoinSpark Wallets.

**Bitcoin Address:** the alphanumeric identifier used within a Bitcoin Transaction Output Script to ensure that the Bitcoin Satoshis within that Bitcoin Transaction Output may be spent only by the holder of the Bitcoin Private Key corresponding to that Bitcoin Address.

**Bitcoin Core:** the open source software which implements the Bitcoin Protocol, and which is made available via the bitcoin.org website or an alternative website if accepted by at least 90% consensus amongst the community of Bitcoin Core users.

**Bitcoin Protocol:** the peer-to-peer transaction transmission and confirmation protocol implemented by the open source Bitcoin Core software. In the event of material differences in the implementation of the Bitcoin Protocol by different versions of Bitcoin Core, the version which is used by more Bitcoin Core nodes on the open Internet than other versions shall be considered authoritative.

**Bitcoin Satoshi:** the smallest unit of economic value which can be represented by the Bitcoin Protocol in Bitcoin Core version 0.9. One unit of "Bitcoin" in common parlance is equal to 100,000,000 (one hundred million) Bitcoin Satoshis.

**Bitcoin Network:** the collection of nodes running the Bitcoin Protocol which are accessible from the open Internet. This may include nodes running software other than Bitcoin Core.

**Bitcoin Transaction Fee:** the sum of the number of Bitcoin Satoshis in the inputs of a particular Bitcoin Transaction minus the sum of the number of Bitcoin Satoshis in the outputs of that same Bitcoin Transaction.

**Bitcoin Transaction Input:** that part of a Bitcoin Transaction which references a Bitcoin Transaction Output of a previous Bitcoin Transaction and which transfers the Bitcoin Satoshis in that previous Bitcoin Transaction Output to new Bitcoin Transaction Outputs or the Bitcoin Transaction Fee.

**Bitcoin Transaction Output:** that part of a Bitcoin Transaction which may contain Bitcoin Satoshis, the condition of whose spending is defined by the corresponding Bitcoin Transaction Output Script.

**Bitcoin Transaction Output Script:** that raw binary data which defines who is permitted to spend the Bitcoin Satoshis in the corresponding Bitcoin Transaction Output.

**Coinbase Transaction:** a Bitcoin Transaction which has no Bitcoin Transaction Inputs and which creates new Bitcoin Satoshis according to the Bitcoin Protocol.

**CoinSpark Address:** that alphanumeric identifier which encodes a Bitcoin Address as well as additional information in the CoinSpark Protocol, and which may be converted to and from a Bitcoin Address using the Reference Implementation.

**CoinSpark Protocol:** that extension to the Bitcoin Protocol which enables the Bitcoin Network to be used to issue and transact CoinSpark Assets and whose functions and behaviors are defined by this Technical Schedule and the Reference Implementation.

**Genesis Spent Output:** the Bitcoin Transaction Output of the Bitcoin Transaction whose TxID is the Genesis Spent Transaction ID and whose index is Genesis Spent Output Index.

**Genesis Transaction:** the Bitcoin Transaction which spends the Genesis Spent Output in the Longest Blockchain.

**JSON:** JavaScript Object Notation, the data format described by RFC 7159 of the Internet Engineering Task Force.

**JSON-RPC:** Version 1.0 of the JavaScript Object Notation Remote Procedure Call protocol, as implemented in Bitcoin Core version 0.9.

**Raw Quantity:** an integer quantity of the CoinSpark Asset, as represented by the information stored in a Blockchain interpreted according to the Reference Implementation. Raw Quantities are converted to Asset Quantities in accordance with this Technical Schedule.

**Reference Implementation:** that implementation of the CoinSpark protocol which is obtained by decompressing the Reference Implementation File using standard decompression software, and then compiling the obtained files using a C compiler, linked with the appropriate libraries. In the event that this operation produces different results on different computer systems, the result of performing the following actions shall be considered authoritative: (a) Create a fresh 64-bit installation of Ubuntu Linux version 12.04 LTS, (b) Install the unzip and gcc packages, (c) Use unzip to decompress the Reference Implementation File, (d) Compile coinspark.c using gcc with the option “-lm”.

**Reference Implementation File:** the unique archive file which contains a Reference Implementation and whose digital signature using the SHA-256 algorithm matches the Reference Implementation Checksum. If multiple different archive files match the Reference Implementation Checksum then the file which is currently available from the Reference Implementation Download URL shall be considered authoritative.

**Transfer Transaction:** a Bitcoin Transaction which is not the Genesis Transaction.

**Txid:** the 64 character hexadecimal string used by the Bitcoin Protocol as a unique identifier for Bitcoin Transactions.

## **ASSET WEB PAGE**

The Asset Web Page shall contain some human-readable information about the CoinSpark Asset, including a link to these Terms and Conditions and a description of or link to the method of Redemption. In addition it shall contain some Javascript code which takes the following form:

```
_bitcoin_asset_specification_(JSON_HERE);
```

where JSON\_HERE is an object in Javascript Object Notation, encoded as UTF-8 encoding, which contains the following fields:

JSON field	Description	Max size of field value	Max size of linked entity	Required?	Fixed?
name	CoinSpark Asset	64 chars	-	Yes	Yes
name_short	Short name of CoinSpark Asset	16 chars	-	Yes	No
issuer	Issuer	-	-	Yes	Yes
description	Underlying Asset	512 chars	-	Yes	Yes
multiple	Raw Unit Multiple	-	-	Yes	Yes
units	Value per Unit	-	-	Yes	Yes
contract_url	Absolute URL for these Terms and Conditions	-	16 MB	Yes	No*
coinspark_tracker_url	Absolute URL of Asset Tracking Server, or array of absolute URLs to Asset Tracking Servers	-	-	Yes	No
issue_date	Issue Date and Time Zone, ISO 8601 format	-	-	No	Yes
expiry_date	Expiry Date and Time Zone, ISO 8601 format	-	-	No	Yes
interest_rate	Interest Rate with % symbol removed	-	-	No	Yes

\* Fields for which “Yes” is present in the “Fixed?” column must match the values provided in the Issue Details and may not be modified. Even though the contract\_url field is not fixed, the content of the linked contract must not be changed.

## RAW QUANTITY

For all Bitcoin Transaction Outputs of Coinbase Transactions, the Raw Quantity is zero.

The Raw Quantity in each Bitcoin Transaction Output of the Genesis Transaction is returned by calling function `CoinSparkGetGenesisOutputQty()` in the Reference Implementation with the following parameters:

- `scriptPubKeys` is an ordered array of pointers, where the pointer at each position in the array contains the memory location of the raw binary representation of the corresponding Bitcoin Transaction Output Script of the Genesis Transaction.

- `scriptPubKeysLen` is an ordered array of integers, where the integer at each position in the array contains the number of bytes in the raw binary representation of the corresponding Bitcoin Transaction Output Script of the Genesis Transaction.
- `outputsSatoshis` is an ordered array of 64-bit integers, where the integer at each position in the array contains the number of Bitcoin Satoshis in the corresponding Bitcoin Transaction Output of the Genesis Transaction.
- `countOutputs` is an integer containing the number of Bitcoin Transaction Outputs in the Genesis Transaction, as well as the number of elements in each of the arrays `scriptPubKeys`, `scriptPubKeysLen` and `outputsSatoshis`.
- `transactionFee` is a 64-bit integer containing the Bitcoin Transaction Fee of the Genesis Transaction, in units of Bitcoin Satoshis.
- `getOutputIndex` is the zero-based index of the Bitcoin Transaction Output of the Genesis Transaction whose Raw Quantity should be returned by the function.

If the Genesis Transaction is not present in the Longest Blockchain, the Raw Quantity in all Bitcoin Transaction Outputs of all Transfer Transactions is zero.

If the Genesis Transaction is present in the Longest Blockchain, then the Raw Quantity in each Bitcoin Transaction Output of all Transfer Transactions is returned by calling function `CoinSparkGetTransferOutputQty()` in the Reference Implementation with the following parameters:

- `genesisScriptPubKeys` is an ordered array of pointers, where the pointer at each position in the array contains the memory location of the raw binary representation of the corresponding Bitcoin Transaction Output Script of the Genesis Transaction.
- `genesisScriptPubKeysLen` is an ordered array of integers, where the integer at each position in the array contains the number of bytes in the raw binary representation of the corresponding Bitcoin Transaction Output Script of the Genesis Transaction.
- `genesisOutputsSatoshis` is an ordered array of 64-bit integers, where the integer at each position in the array contains the number of Bitcoin Satoshis in the corresponding Bitcoin Transaction Output of the Genesis Transaction.
- `genesisCountOutputs` is an integer containing the number of Bitcoin Transaction Outputs in the Genesis Transaction, as well as the number of elements in each of the arrays `genesisScriptPubKeys`, `genesisScriptPubKeysLen` and `genesisOutputsSatoshis`.
- `genesisTransactionFee` is a 64-bit integer containing the Bitcoin Transaction Fee of the Genesis Transaction, in units of Bitcoin Satoshis.
- `genesisBlockNum` is the number of the Block in the Longest Blockchain in which the Genesis Transaction is present.
- `genesisTxOffset` is the number of bytes between the start of the Block indicated by `genesisBlockNum` and the start of the Genesis Transaction in that block. This offset shall include all headers of the Block including that part of the Block which does not contain Bitcoin Transactions.
- `genesisTxId` is a pointer to the memory location containing the raw binary representation of the TxID of the Genesis Transaction, where the bytes in the TxID are in the same order as in the hexadecimal representation of that TxID in the textual output of Bitcoin Core.

- `thisInputBalances` is an ordered array of 64-bit integers, where the integer at each position in the array contains the Raw Quantity of the CoinSpark Asset which is spent by the corresponding Bitcoin Transaction Input of the Transfer Transaction.
- `thisCountInputs` is an integer containing the number of Bitcoin Transaction Inputs in the Transfer Transaction, as well as the number of elements in the array `thisInputBalances`.
- `thisScriptPubKeys` is an ordered array of pointers, where the pointer at each position in the array contains the memory location of the raw binary representation of the corresponding Bitcoin Transaction Output Script of the Transfer Transaction.
- `thisScriptPubKeysLen` is an ordered array of integers, where the integer at each position in the array contains the number of bytes in the raw binary representation of the corresponding Bitcoin Transaction Output Script of the Transfer Transaction.
- `thisOutputsSatoshis` is an ordered array of 64-bit integers, where the integer at each position in the array contains the number of Bitcoin Satoshis in the corresponding Bitcoin Transaction Output of the Transfer Transaction.
- `thisCountOutputs` is an integer containing the number of Bitcoin Transaction Outputs in the Transfer Transaction, as well as the number of elements in each of the arrays `thisScriptPubKeys`, `thisScriptPubKeysLen` and `thisOutputsSatoshis`.
- `thisTransactionFee` is a 64-bit integer containing the Bitcoin Transaction Fee of the Transfer Transaction, in units of Bitcoin Satoshis.
- `getOutputIndex` is the zero-based index of the Bitcoin Transaction Output of the Transfer Transaction whose Raw Quantity should be returned by the function.

## ASSET QUANTITY

The Asset Quantity is calculated from the Raw Quantity according to the following formula:

$$\text{Asset Quantity} = \text{Floor}(\text{Raw Quantity} \times (1.0 + (\text{Interest Rate} \div 100))^{\text{Years Elapsed}}) \times \text{Raw Unit Multiple} \times \text{Value per Unit}$$

where `Floor()` is a function which rounds down to the nearest integer, and `Years Elapsed` is equal to the number of seconds that have elapsed within the Time Zone since the Issue Date divided by 31,557,600 (i.e. the number of seconds in 365.25 days).

## ASSET TRACKING SERVER QUERIES

An Asset Tracking Server may be queried by a CoinSpark Wallet using JSON-RPC with method name `"coinspark_assets_get_qty"` and the following two parameters:

- `"assets"` is an array of one or more TxIDs, one of which must be the TxID of the Genesis Transaction.
- `"txouts"` is an array of one or more JSON objects, where each JSON object represents a Bitcoin Transaction Output of interest and contains two items: (a) key `"txid"` whose corresponding value is the TxID of the Bitcoin Transaction containing that Bitcoin

Transaction Output, (b) key "vout" whose corresponding value is the zero-based index of that Bitcoin Transaction Output in its Bitcoin Transaction.

If the Asset Tracking Server encountered a general problem in processing the query, the field "error" of its response must be a JSON object. This JSON object must include the key "message" whose value is a human-readable explanation of the problem in the English language.

If the Asset Tracking Server did not encounter a general problem in processing the query, the field "result" of its response must be a JSON object. This object must include a key containing the TxID of the Genesis Transaction whose corresponding value is an array of responses, one per Bitcoin Transaction Output of interest. Each item in this array must be a JSON object containing three items: (a) key "txid" whose corresponding value is the TxID of the Bitcoin Transaction containing that Bitcoin Transaction Output, (b) key "vout" whose corresponding value is the zero-based index of that Bitcoin Transaction Output in its Bitcoin Transaction, (c) key "qty" whose corresponding value is the Raw Quantity of the CoinSpark Asset in that Bitcoin Transaction Output.

If a particular Raw Quantity could not be provided, the corresponding "qty" key must be replaced by an "error" key, whose value must be a JSON object. This JSON object must include the key "message" whose value is a human-readable explanation of the error in the English language.