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Inventor(s)

DANIEL; ISAAC S.

SYSTEMS, METHODS AND DEVICES FOR RETAIL CRYPTOCURRENCY TRANSACTIONS

Abstract

Systems, computer-implemented methods, devices and computer programmable product directed to operation of a retail financial cryptocurrency network or platform are disclosed. Validations methods for validating users and use of devices in the retail financial cryptocurrency network or platform wirelessly, along with supporting elements and devices are also disclosed.

Inventors: DANIEL; ISAAC S. (PARKLAND, FL)

Applicant: SPARX NOVATE, LLC (NEW YORK, NY)

Family ID: 96660987

Assignee: SPARX NOVATE, LLC (NEW YORK, NY)

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS AND PRIORITY CLAIMS [0001] This patent application is a Continuation-In-Part application of, and claims priority to, U.S. Non-Provisional patent application Ser. No. 18/144,361 titled “SYSTEMS, METHODS AND DEVICE FOR RETAIL CRYPTOCURRENCY TRANSACTIONS”, filed May 8, 2023, and further claims priority under 35 U.S.C. § 119(e) to U.S. Provisional Patent Application Ser. No. 63/317,055, titled “SYSTEMS, METHODS AND DEVICE FOR RETAIL CRYPTO TRANSACTIONS” filed Mar. 6, 2022. The entire disclosure of the aforementioned patent applications are incorporated by reference as if fully stated herein.

FIELD OF THE INVENTION

[0002] The present invention is generally related to computer implemented methods, processes, systems, platforms, computer program product, and devices directed to, inter alia, the enabling and implementation of a retail cryptocurrency transaction financial network and devices.

BACKGROUND OF THE INVENTION

[0003] Cryptocurrencies are quickly growing in popularity and becoming mainstream currencies. From cryptocurrency ATMs to global businesses accepting digital currency as a form of payment, retailers are following suit. With time, cryptocurrency will be the preferred payment method of the future. Since the first transaction, it has become a more accepted ledger. From exchanges to digital wallets, people around the world are buying and making domestic and international purchases with cryptocurrency.

[0004] Because of the decentralized nature of cryptocurrency, which cuts out the middleman, more and more retailers are using cryptocurrency to do business. This allows retailers to receive payments in real time with little to no transaction fees.

[0005] However, the current process of crypto acceptance in the retail space is not as streamlined as one may think. While online purchases are more easily accepted and processed, they tend to include a third-party crypto processing application which is required for both parties. For instance, if one wishes to pay for an in-store purchase in person, the process is still in development and is not brand agnostic.

[0006] Aspects of embodiments of the present invention contemplate computer implemented methods, processes, systems, platforms, computer program product, and devices directed to the operation of a crypto network using a Hyperledger with a proprietary software platform that retailers as well as developers for retailers can use to create new applications.

[0007] Aspects of embodiments of the present invention contemplate computer implemented methods, processes, systems, platforms, computer program product, and devices that are business-agnostic and can facilitate cryptocurrency acceptance for any business, large or small, online or in person.

[0008] Aspects of embodiments of the present invention also contemplate a network which utilizes a token for retail adoption and use.

[0009] Advantages of the contemplated invention include its general accessibility for use by the

general public, retailers etc. This is made possible by the openness and eventual and centralization of cryptocurrency.

[0010] Additional advantages of aspects of embodiment of the present invention include the ability of the contemplated invention to enable retail businesses to create rewards for their users. Aspects of embodiments of the present invention also enable users to save on taxes from direct purchases from dealers or high expenses of fashion products.

[0011] This may be made possible following the acceptance of the payment system(s) contemplated by aspects of embodiments of the present invention, as a result of the openness and centralization of cryptocurrency. There may also be strategic benefits for government or states to give tax incentives for specific industries.

[0012] Aspects of embodiments of the contemplated invention also eliminates the need for third-party processing platforms or middlemen, thereby saving the users from processing costs.

[0013] Another advantage of an aspect of an embodiment of the present invention, is the ability of users to roll over their change to their account within the system when making purchases from retailers that also use the system.

[0014] Typically, following certain purchases, there may be coins, or change left. Roll-over or extension as contemplated by aspect(s) of embodiment(s) of the present invention, eliminates the hassle of dealing with a pile of coins that accumulates after receiving change in the form of coins over a period of time. Such roll-over allows users to spend their change with the convenience of a fiat card, view their balance & transactions with either on their desktop dashboard or a fiat mobile application, all according to aspect(s) of embodiment(s) of the present invention. This would eliminate retailers' need for their cashiers to count and dispense coins or change for their customers in cash/fiat. This concept would also save time as cashiers would no longer be required to spend the time counting and providing customers with their change. Rather, cashiers would only have to transfer the change through the contemplated system, according to aspect(s) of embodiment(s) of the present invention, to the customer's card. This is also a major point, as it provides a critical security feature for both customers and retailers.

[0015] In addition, customers will have a better currency management, as they no longer would have to worry about the need to leave change/coins such as in restaurants/coffee shops where sometimes customers tend to walk away due to time constraint on waiting for their cash change.

SUMMARY OF THE INVENTION

[0016] Aspects of embodiments of the present invention contemplate computer-implemented methods, computer program product, systems and devices that, inter alia, enable and implement operation of a retail cryptocurrency transaction financial network and associated devices.

[0017] In an aspect of an embodiment of the present invention, the retailer may take the following steps to accept cryptocurrency: obtain a cryptocurrency address, print and post the retailer's QR code, wait for processing of transaction(s), cash out.

[0018] Retailers seeking to take part in the system as contemplated by aspects of embodiments of the present invention, may first purchase the designated cryptocurrency, incorporate an application programming interface (API) (contemplated by aspect(s) of embodiments of the present invention) into the retailer's payment platform. Alternatively, the retailer could use a Point of Sale (POS) terminal or device (contemplated by aspect(s) of embodiments of the present invention). When making purchase(s), customers are enabled by the system contemplated by aspect(s) of embodiments of the present invention to round up their payment and add their change to their coin via the API.

[0019] Aspects of embodiments of the present invention may be used by a variety of retailers such as department stores, specialty stores, supermarkets, convenience stores, discount stores, super stores/hypermarkets, warehouse stores, e-commerce store, dollar stores and drug stores.

[0020] An aspect of an embodiment of the present invention contemplates a system configured towards implementation of a retail cryptocurrency transaction financial network, which may

include: at least one processor configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, at least one database, at least one payment card, where the at least one payment card may include any one or more of: a Key Signature Pin, a biometric fingerprint sensor, and at least one point of sale (POS) device, where the POS device verifies a user's signature on the at least one payment card, where all components of the system are any one of: in communication with each other, in communication with at least one other element of the system.

[0021] In aspect of an embodiment of the present invention, the system may further include at least one portable device, in communication with any one or more of: the at least one processor, at least one database, at least one POS, at least one payment card, where the at least one portable device may include any one or a combination of: a biometric module, biometric information, a transceiver module, a computer processor unit, coded information, memory.

[0022] In aspect of an embodiment of the present invention, the system may further include text data stored on the at least one database.

[0023] In aspect of an embodiment of the present invention, the text data may include of at least one captured signature image.

[0024] In aspect of an embodiment of the present invention, the text data is encoded into a cryptographically signed binary file.

[0025] In aspect of an embodiment of the present invention, the system may further include at least one stored element, where the cryptographically signed binary file may be transmitted to the at least one stored element and where the at least one stored element may be read via Near-Field Communication (NFC).

[0026] An aspect of an embodiment of the present invention also contemplates a system configured towards implementation of a retail cryptocurrency transaction financial network, comprising: at least one processor configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, at least one database, at least one payment card, where said at least one payment card comprises of any one or more of: a Key Signature Pin, a biometric fingerprint sensor, a verification and authentication module, a transceiver, memory, a transceiver, and at least one point of sale (POS) device, where said POS device verifies a user's signature on said at least one payment card, where all components of said system are any one of: in communication with each other, in communication with at least one other element of said system.

[0027] In an aspect of an embodiment of the present invention, the system may additionally include at least one portable device, in communication with any one or more of: said at least one processor, at least one database, at least one POS, at least one payment card, where said at least one portable device comprises of any one or a combination of: a biometric module, biometric information, a transceiver module, a computer processor unit, coded information, memory.

[0028] In an aspect of an embodiment of the present invention, the system may additionally include bioprint data stored on said memory of said at least one payment card.

[0029] In an aspect of an embodiment of the present invention, the bioprint data may be encoded into a cryptographically signed binary file.

[0030] In an aspect of an embodiment of the present invention, the system may include at least one stored element, where said cryptographically signed binary file may be transmitted to said at least one stored element and where said at least one stored element may be read via Near-Field Communication (NFC).

[0031] Another aspect of an embodiment of the present invention contemplates a computer-implemented method for implementing operation of a retail cryptocurrency transaction financial network, comprising executing on at least one processor, the steps of: enabling purchase and installation of least one type of cryptocurrency as designated by the retail cryptocurrency

transaction financial network, incorporation, by a retail location, of at least one application programming interface (API) linked or relevant to the at least one type of cryptocurrency into the retail location's payment platform, and operation of the retail cryptocurrency transaction financial network once the at least one API has been integrated with the retail location's payment platform.

[0032] Another aspect of an embodiment of the present invention contemplates a computer-implemented method for implementing operation of a retail cryptocurrency transaction financial network, comprising executing on at least one processor configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, the steps of: enabling purchase and installation of least one type of cryptocurrency as designated by the retail cryptocurrency transaction financial network, and operation, by a retail location, of at least one point of sale terminal linked to the cryptocurrency transaction financial network, and operation of the retail cryptocurrency transaction financial network once the at least one API has been integrated with the retail location's payment platform.

[0033] Another aspect of an embodiment of the present invention contemplates a computer-implemented method for implementing operation of a retail cryptocurrency transaction financial network, comprising executing on at least one processor configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, the steps of: enabling purchase and installation of least one type of cryptocurrency as designated by the retail cryptocurrency transaction financial network, and operation, by a retail location, of at least one point of sale terminal linked to the cryptocurrency transaction financial network, and operation of the retail cryptocurrency transaction financial network once the at least one API has been integrated with the retail location's payment platform.

[0034] Another aspect of an embodiment of the present invention contemplates a computer-implemented method for verifying a user's signature on a payment card instantly, the method comprising executing on at least one processor configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, the steps of: receiving data from at least one payment card, searching for data previously supplied by the user, where the data was obtained by an Optical Character Recognition (OCR) process during the user's application for at least any one or more of: a credit card, debit card, cryptocurrency payment card or digital wallet, and where the data is sent from at least one device, submitting the received data to a centralized database, comparing the received data with data located within the centralized database, matching the received data with previously supplied data already within the centralized database, extracting text data from the previously supplied data already within the centralized database, and encoding the text data from the previously supplied data already within the centralized database.

[0035] In another aspect of an embodiment of the present invention, the received data may comprise of any one of: an entire captured signature image, a portion of a captured signature image.

[0036] In another aspect of an embodiment of the present invention, the encoded text data is encoded into a cryptographically signed binary file.

[0037] In another aspect of an embodiment of the present invention, the validity of the cryptographically signed binary file may be confirmed by comparing its signature to an expected signature based on supplied parameters.

[0038] In another aspect of an embodiment of the present invention, the computer-implemented method may further comprise the step of transmitting the signed binary file to a secure element where it is housed.

[0039] In another aspect of an embodiment of the present invention, the secured element may be a computer chip.

[0040] In another aspect of an embodiment of the present invention, the secure element is

configured and enabled to be read via Near-field Communication (NFC) for verification purposes without a wireless network being present or being used.

[0041] Another aspect of an embodiment of the present invention contemplates a computer-implemented method for implementing operation of a retail cryptocurrency transaction financial network, comprising executing, on at least one processor configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, steps of: enabling purchase and installation of least one type of cryptocurrency as designated by the retail cryptocurrency transaction financial network, incorporation, by a retail location, of at least one application programming interface (API) linked or relevant to the at least one type of cryptocurrency into the retail location's payment platform, verification and authentication of a bioprint as received by at least one payment card, where the verification and authentication is undertaken by a verification and authentication module of the at least one payment card, and operation of the retail cryptocurrency transaction financial network once the at least one API has been integrated with the retail location's payment platform.

[0042] In another aspect of an embodiment of the present invention, the computer-implemented method undertaken by the verification and authentication module of the at least one payment card, may include steps of: receiving data on the at least one payment card, searching for data previously supplied by the user, where the data is stored on memory of the at least one payment card, comparing the received data with previously stored data located on the memory of the at least one payment card, and determining whether a match exists between the received data with previously supplied data already stored within the memory of the at least one payment card.

[0043] In another aspect of an embodiment of the present invention, the computer-implemented method may include the step of transmitting confirmation of the match to a secure element where it is housed.

[0044] In another aspect of an embodiment of the present invention, the secure element may be configured and enabled to be read via Near-field Communication (NFC) for verification purposes without a wireless network being present or being used.

[0045] A further aspect of an embodiment of the present invention contemplates a computer program product comprising a computer usable medium having computer executable instructions stored therein for causing a computer processor to verify a payment card transaction, the computer executable instructions comprising computer readable program code for: enabling purchase and installation of least one type of cryptocurrency as designated by the retail cryptocurrency transaction financial network, incorporation, by a retail location, of at least one application programming interface (API) linked or relevant to the at least one type of cryptocurrency into the retail location's payment platform, and operation of the retail cryptocurrency transaction financial network once the at least one API has been integrated with the retail location's payment platform.

[0046] A further aspect of an embodiment of the present invention contemplates a computer program product comprising a computer usable medium having computer executable instructions stored therein for causing a computer processor to verify a payment card transaction, the computer executable instructions comprising computer readable program code for: receiving data from at least one payment card, searching for data previously supplied by the user, where the data was obtained by an Optical Character Recognition (OCR) process during the user's application for at least any one or more of: a credit card, debit card, cryptocurrency payment card or digital wallet, and where the data is sent from at least one device, submitting the received data to a centralized database, comparing the received data with data located within the centralized database, matching the received data with previously supplied data already within the centralized database, extracting text data from the previously supplied data already within the centralized database, and encoding the text data from the previously supplied data already within the centralized database.

[0047] In a further aspect of an embodiment of the present invention, the received data of the

computer program product may comprise of any one of: an entire captured signature image, a portion of a captured signature image.

[0048] In a further aspect of an embodiment of the present invention, the encoded text data of the computer program product may be encoded into a cryptographically signed binary file.

[0049] In a further aspect of an embodiment of the present invention, the computer program product may include computer readable program code for comparing the signature of the cryptographically signed binary file to an expected signature based on supplied parameters to confirm validity of the cryptographically signed binary file.

[0050] In a further aspect of an embodiment of the present invention, the computer program product may include computer readable program code for transmitting the cryptographically signed binary file to a secure element where it is housed.

[0051] In a further aspect of an embodiment of the present invention, the secured element of the computer program product may be a computer chip.

[0052] In a further aspect of an embodiment of the present invention, the secure element of the computer program product may be configured and enabled to be read via Near-field Communication (NFC) for verification purposes without a wireless network being present or being used.

[0053] A further aspect of an embodiment of the present invention contemplates a computer program product comprising a computer usable medium having computer executable instructions stored therein for causing a computer processor to implement operation of a retail cryptocurrency transaction financial network, the computer executable instructions comprising computer readable program code for: enabling purchase and installation of least one type of cryptocurrency as designated by the retail cryptocurrency transaction financial network, operation, by a retail location, of at least one point of sale terminal linked to the cryptocurrency transaction financial network, and operation of the retail cryptocurrency transaction financial network once the at least one API has been integrated with the retail location's payment platform.

[0054] A further aspect of an embodiment of the present invention contemplates a system configured towards implementation of a cryptocurrency transaction financial network/platform, comprising: at least one processor configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, at least one database, and at least one payment card, where said at least one payment card comprises of any one or more of: at least one Key Signature Pin, a biometric fingerprint sensor/sensor data, network/platform-related metadata.

[0055] In a further aspect of an embodiment of the present invention the system may further comprise of at least one point of sale (POS) device, where said POS device may verify a user's signature on said at least one payment card, where all components of said system are any one of: in communication with each other, in communication with at least one other element of said system.

[0056] In a further aspect of an embodiment of the present invention the system may further comprise of a module for capturing at least one user generated mnemonic phrase.

[0057] In a further aspect of an embodiment of the present invention said at least one user generated mnemonic phrase may comprise of a sequence of words.

[0058] In a further aspect of an embodiment of the present invention, any one or more of: at least one Key Signature Pin, a biometric fingerprint sensor data, network/platform-related metadata may be transferred wirelessly via NFC to a secure element inside of said at least one payment card.

[0059] In a further aspect of an embodiment of the present invention the system may further comprise of a module for encoding data related to transfer of funds from one account within the system to another account within the system, where said data is encoded as a QR Marker/QR code

[0060] In a further aspect of an embodiment of the present invention the system may further comprise of a module for enabling scanning of said QR Marker/QR code, where said scanning initiates exchange of currency.

[0061] In a further aspect of an embodiment of the present invention the system may further comprise of a module for validating at least one cryptographic signature belonging to a sending account, where said validation completes a transaction within said system.

[0062] A further aspect of an embodiment of the present invention contemplates a computer program product which may include a non-transitory computer readable medium having computer executable instructions stored therein for implementing operation of a retail cryptocurrency transaction financial network, comprising executing, on at least one processor configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, computer readable program code for: enabling purchase and installation of least one type of cryptocurrency as designated by the retail cryptocurrency transaction financial network, incorporation, by a retail location, of at least one application programming interface (API) linked or relevant to the at least one type of cryptocurrency into the retail location's payment platform, verification and authentication of a bioprint as received by at least one payment card, where the verification and authentication is undertaken by a verification and authentication module of the at least one payment card, and operation of the retail cryptocurrency transaction financial network once the at least one API has been integrated with the retail location's payment platform.

[0063] In a further aspect of an embodiment of the present invention the computer program product's computer readable code for operation of the verification and authentication module of the at least one payment card, may include computer readable program code for: receiving data on the at least one payment card, searching for data previously supplied by the user, where the data is stored on memory of the at least one payment card, comparing the received data with previously stored data located on the memory of the at least one payment card, and determining whether a match exists between the received data with previously supplied data already stored within the memory of the at least one payment card.

[0064] In a further aspect of an embodiment of the present invention the computer program product may additionally include computer readable code for transmitting confirmation of the match to a secure element where it is housed.

[0065] In a further aspect of an embodiment of the present invention, the secure element is configured and enabled to be read via Near-field Communication (NFC) for verification purposes without a wireless network being present or being used.

[0066] A yet further aspect of an embodiment of the present invention contemplates a computer-implemented method for implementing operation of a cryptocurrency transaction financial network/platform, comprising executing on at least one processor configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, the steps of: activating at least one account within said network, where said activation is done by a user's generation of a mnemonic phrase, where said mnemonic phrase comprises of at least one sequence of words, using said at least one sequence of words for account recovery purposes, wireless transfer of any one or more of: at least one Key Signature Pin, platform-related metadata, where said any one or more of at least one Key Signature Pin, platform-related metadata is transferred via NFC to a secure element inside of a payment card, utilization of at least one exchange to fund at least one account, where said at least one exchange supports said cryptocurrency transaction financial network.

[0067] In another yet further aspect of an embodiment of the present invention the computer-implemented method may further comprise the step of purchasing certain currency through an exchange with a fiat credit card.

[0068] In another yet further aspect of an embodiment of the present invention the computer-implemented method may further comprise the step of instant reflection of settled funds in a user's account.

[0069] In another yet further aspect of an embodiment of the present invention the computer-implemented method may further comprise the step of sending said settled funds directly to any other at least one account of said cryptocurrency transaction financial network.

[0070] In another yet further aspect of an embodiment of the present invention the computer-implemented method may further comprise the step of generating at least one transaction for specific amounts of cryptocurrency used within said cryptocurrency transaction financial network.

[0071] In another yet further aspect of an embodiment of the present invention the computer-implemented method may further comprise the step of encoding data related to the transfer of funds from at least one account to at least another account as a QR Marker/QR code.

[0072] In another yet further aspect of an embodiment of the present invention the computer-implemented method may further comprise the step of scanning QR Marker/QR code to initiate exchange of currency/cryptocurrency.

[0073] In another yet further aspect of an embodiment of the present invention the computer-implemented method may further comprise the step of validating the cryptographic signature belonging to at least one account.

[0074] A yet still further aspect of an embodiment of the present invention contemplates a computer program product comprising a computer usable medium having computer executable instructions stored therein for causing a computer processor to implement operation of a cryptocurrency transaction financial network/platform, said computer executable instructions comprising computer readable program code for: activating at least one account within said network, where said activation is done by a user's generation of a mnemonic phrase, where said mnemonic phrase comprises of at least one sequence of words, using said at least one sequence of words for account recovery purposes, wireless transfer of any one or more of: at least one Key Signature Pin, platform-related metadata, where said any one or more of at least one Key Signature Pin, platform-related metadata is transferred via NFC to a secure element inside of a payment card, utilization of at least one exchange to fund at least one account, where said at least one exchange supports said cryptocurrency transaction financial network.

[0075] In another yet still further aspect of an embodiment of the present invention, the computer program product may further comprise of computer readable program code for purchasing certain currency through an exchange with a fiat credit card.

[0076] In another yet still further aspect of an embodiment of the present invention, the computer program product may further comprise of computer readable program code for instant reflection of settled funds in a user's account.

[0077] In another yet still further aspect of an embodiment of the present invention, the computer program product may further comprise of computer readable program code for sending said settled funds directly to any other at least one account of said cryptocurrency transaction financial network.

[0078] In another yet still further aspect of an embodiment of the present invention, the computer program product may further comprise of computer readable program code for generating at least one transaction for specific amounts of cryptocurrency used within said cryptocurrency transaction financial network.

[0079] In another yet still further aspect of an embodiment of the present invention, the computer program product may further comprise of computer readable program code for encoding data related to the transfer of funds from at least one account to at least another account as a QR Marker/QR code.

[0080] In another yet still further aspect of an embodiment of the present invention, the computer program product may further comprise of computer readable program code for scanning QR Marker/QR code to initiate exchange of currency/cryptocurrency.

[0081] In another yet still further aspect of an embodiment of the present invention, the computer

program product may further comprise of computer readable program code for validating the cryptographic signature belonging to at least one account.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0082] Further objectives and advantages of the present invention may be derived by referring to the detailed description and claims when considered in connection with the Figures. The present invention is illustrated by way of example and not limitation in the accompanying figures, wherein like reference numbers refer to similar items throughout the Figures.

[0083] FIG. 1A illustrates a retail cryptocurrency transaction financial network/platform (or system) according to aspects of embodiments of the present invention.

[0084] FIGS. 1B-1C illustrates a point-of-sale device of a retail cryptocurrency transaction financial network/platform (or system) according to aspects of embodiments of the present invention.

[0085] FIGS. 1D & 1E illustrate a biometric fingerprint stored value card as a component of the contemplated system according to aspects of embodiments of the present invention.

[0086] FIG. 2 illustrates a retail cryptocurrency transaction financial network/platform (or system) according to another set of aspects of embodiments of the present invention.

[0087] FIG. 3 illustrates an operation of a retail cryptocurrency transaction financial network/platform (or system) according to aspects of embodiments of the present invention.

[0088] FIG. 4 illustrates an operation of a retail cryptocurrency transaction financial network/platform (or system) according to another set of aspects of embodiments of the present invention.

[0089] FIG. 5 illustrates a transaction flow between a payment card and a portable device and/or a point-of-sale device according to an aspect of an embodiment of the present invention.

[0090] FIGS. 6A-6D illustrate displays of a portable device of a cryptocurrency transaction financial network/platform showing display buttons according to an aspect of an embodiment of the present invention.

[0091] FIG. 7 illustrates a process of activating and account/transacting a transaction in conjunction with a retail cryptocurrency transaction financial network/platform (or system) according to aspects of embodiments of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0092] Referring now to FIGS. 1A-1C, a retail cryptocurrency transaction financial network/platform **100** along with certain components of same are shown according to aspects of embodiments of the present invention. Network/platform **100** may include: at least one processor **102**, where processor(s) **102** may be configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes. Network/platform **100** may also include at least one database or memory **104**, at least one payment card **106**, where at least one payment card **106** may include any one or more of: a Key Signature pin **108A**, a biometric fingerprint sensor **108B**. Key signature pin **108A** may, in an aspect of an embodiment of the present invention, be a pair of RSA (i.e., Rivest-Shamir-Adleman) keys where the private key from the pair may be used to sign certificate requests and transactions. Network/platform **100** may also include at least one point of sale (POS) device, where POS device **110** verifies a user's signature on at least one payment card **106**. In an aspect of an embodiment of the present invention, all components of network/platform **100** may be any one of: in communication with each other, in communication with at least one other element of network/platform **100**.

[0093] In an aspect of an embodiment of the present invention, the at least one payment card **106**

may include a verification and authentication module **108C** which may be configured to integrate the functionality of a combined or separate fingerprint sensor and chip, thereby ensuring the card's robust biometric security. In an aspect of an embodiment of the present invention, the verification and authentication module **108C** may operate to verify and authenticate a user's bioprint as captured by biometric fingerprint sensor **108B**. Verification and authentication may be made possible by matching the received bioprint with bioprint data stored on at least one payment card **106** in storage **108D**.

[0094] In another aspect of an embodiment of the present invention, at least one payment card **106** may include transceiver **108E** which may enable verification and authentication module **108C** to compare and/or match the received bioprint with bioprint data stored beyond at least one payment card **106**, such as at least one database or memory **104** of network/platform **100**. In such an aspect, upon receipt of the bioprint, verification and authentication module **108C** would send the received bioprint via transceiver **108E** to network/platform **100**, which may in one aspect of an embodiment of the present invention, may include, but not be limited to, at least one database or memory **104** of network/platform **100**, which may have its own verification and authentication module, **102A**. In an aspect of an embodiment of the present invention, verification and authentication module, **102A** may be a component/function of processor(s) **102** or, in another aspect of an embodiment of the present invention, a separate component of network/platform **100**. In an aspect of an embodiment of the present invention, the verification and authentication processing may be done by processor(s) **102**, which would then match the bioprint data received from at least one payment card **106** with bioprint data **104A** stored on database or memory **104**. Upon matching the bioprint data, processor(s) **102** would then send, via transceiver **126** of network/platform **100** (which may also function to receive information from at least one payment card **106**), the verified/authenticated status of the bioprint back to at least one payment card **106**, which would receive the confirmation via transceiver **108E**, thereby providing the user access to at least one payment card **106**.

[0095] If there is no match, processor(s) **102** would then send the no match message to at least one payment card **106**, which upon receipt, would deny at least one payment card **106** access to the user providing the unmatched, unverified bioprint.

[0096] In an aspect of an embodiment of the present invention, network/platform **100** may further include at least one portable device **112**, in communication with any one or more of: at least one processor **102**, at least one database **104**, at least one POS, at least one payment card **106**, where at least one portable device **112** may include any one or a combination of: a biometric module **112A**, biometric information **112B**, a transceiver module **112C**, a computer processor unit **112D**, coded information **112E**, data **112F**, memory **112G**.

[0097] In an aspect of an embodiment of the present invention, network/platform **100** may further include text data **114** stored on at least one database **104**. In an aspect of an embodiment of the present invention, text data **114** may include at least one captured signature image **116**. In an aspect of an embodiment of the present invention, text data **114** may be encoded into a cryptographically signed binary file **118**.

[0098] In an aspect of an embodiment of the present invention, network/platform **100** may further include at least one stored element **120**, where cryptographically signed binary file **118** may be transmitted to at least one stored element **120** and where at least one stored element **120** may be read via Near-Field Communication (NFC). Stored element **120** may be located in any one or more of: database **104**, POS **110**, payment card **106**, portable device **112**.

[0099] In an aspect of an embodiment of the present invention, network/platform **100** may include at least one application programming interface (API) **122** which may be installed onto POS device **110** or may be resident on at least one database **104**.

[0100] In an aspect of an embodiment of the present invention, network/platform **100** may include retail location **124** where POS device **110** may be located.

[0101] In an aspect of an embodiment of the present invention, network/platform **100** may also

include element **126** which may be located on at least one database **104**.

[0102] Referring now to FIGS. **1D** and **1E**, front and rear views of a biometric fingerprint stored value card **106** of system **100** are shown according to aspects of embodiments of the present invention. In an aspect of an embodiment of the present invention, the at least one payment card **106** may include Key Signature pin **108A**, biometric fingerprint sensor **108B**, for capturing a user's bioprint, verification and authentication module **108C**, memory or storage **108D**, and transceiver **108E**.

[0103] In an aspect of an embodiment of the present invention, verification and authentication module **108C** may be configured to integrate the functionality of a combined or separate fingerprint sensor and chip, thereby ensuring the card's robust biometric security. In an aspect of an embodiment of the present invention, verification and authentication module **108C** may operate to verify and authenticate a user's bioprint as captured by biometric fingerprint sensor **108B**. Verification and authentication may be made possible by matching the received bioprint with bioprint data stored on at least one payment card **106** in storage **108D**.

[0104] In another aspect of an embodiment of the present invention, at least one payment card **106** may include transceiver **108E**, which may enable verification and authentication module **108C** to compare and/or match the received bioprint with bioprint data stored beyond at least one payment card **106**, such as at least one database or memory **104** of network/platform **100**. In such an aspect, upon receipt of the bioprint, verification and authentication module **108C** would send the received bioprint via transceiver **108E** to network/platform **100**, which may in one aspect of an embodiment of the present invention, may include, but not be limited to, at least one database or memory **104** of network/platform **100**, which may have its own verification and authentication module, **102A**.

[0105] Referring now to FIG. **2**, a retail cryptocurrency transaction financial network/platform **200** is shown according to another set of aspects of embodiments of the present invention.

Network/platform **200** may include at least one processor **202** which may be configured towards implementation of a cryptocurrency transaction financial network/platform, where at least one processor **202** may be configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, all for the operation of network/platform **200**.

[0106] In an aspect of an embodiment of the present invention, network/platform **200** may include at least one database or memory **204**, and at least one payment card **206**, where at least one payment card **206** comprises of any one or more of: at least one Key Signature Pin **208A**, a biometric fingerprint sensor **208B**, sensor data **208C**, network/platform-related metadata **208D**.

Key signature pin **208A** may, in an aspect of an embodiment of the present invention, be a pair of RSA keys where the private key from the pair may be used to sign certificate requests and transactions.

[0107] In a further aspect of an embodiment of the present invention, network/platform **100** may further comprise of at least one point of sale (POS) device **210**, where POS device **210** may be used to verify a user's signature **226** on at least one payment card **206**. In an aspect of an embodiment of the present invention, all components of network/platform **200** are any one of: in communication with each other, in communication with at least one other element of said network/platform **200**.

[0108] In a further aspect of an embodiment of the present invention network/platform **200** may further comprise of a module **212** for capturing at least one user generated mnemonic phrase **214**. In a further aspect of an embodiment of the present invention at least one user generated mnemonic phrase **214** may comprise of a sequence of words.

[0109] In an aspect of an embodiment of the present invention, network **200** may manage access and identities with a cold storage solution, whereby private keys may be generated and/or stored offline. In one aspect of an embodiment of the present invention, to activate an account on network **200**, a user may, in addition to other generate mnemonic phrase **214** and the sequence of words can be used for a variety of purposes, including account sign in, account recovery etc. Newly created

keys and platform related metadata may be transferred wirelessly via NFC to payment card **206** which may have a secure element **216** or equivalent for storage of the keys/metadata.

[0110] In a further aspect of an embodiment of the present invention, any one or more of: at least one Key Signature **226** Pin **208A**, a biometric fingerprint sensor **208B** data, network/platform-related metadata **208D** may be transferred wirelessly via NFC to a secure element **216** inside of said at least one payment card **206**.

[0111] In a further aspect of an embodiment of the present invention network/platform **200** may further comprise of a module **218** for encoding data related to transfer of funds from one account within network/platform **200** to another account within network/platform **100**, where said data may be encoded as a QR Marker/QR code **220**

[0112] In a further aspect of an embodiment of the present invention network/platform **100** may further comprise of a module **222** for enabling scanning of said QR Marker/QR code **220**, where said scanning initiates exchange of currency.

[0113] In a further aspect of an embodiment of the present invention network/platform **200** may further comprise of a module **224** for validating at least one cryptographic signature **226** belonging to a sending account, where said validation completes a transaction within said network/platform **200**.

[0114] In an aspect of an embodiment of the present invention, a merchant may generate a transaction requiring specific amounts of cryptocurrency. In one aspect, the merchant, using POS **210** may encode (using module **218**) the transaction (e.g. information related to a purchase such as cost, type of goods/service etc.) as QR Marker/QR code **220**. A user may then scan the QR Marker/QR code **220** using a portable device **228** using the application (“app”) associated with network **200**. The transaction may then be completed when network **200** validates the cryptographic signature **226**.

[0115] Referring now to FIG. **3**, a process **300** illustrating operation of a retail cryptocurrency transaction financial network/platform **100** is shown according to aspects of embodiments of the present invention. Such operation may be made possible by operation of at least one processor **102**, which, in an aspect of an embodiment of the present invention, may be configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes in the implementation of process **300**'s steps. Process **300** starts at step **302** with the enabling of the purchase and installation of least one type of cryptocurrency as designated by retail cryptocurrency transaction financial network **100**. Next at step **304**, at least one application programming interface (API) **122**, linked or relevant to at least one type of cryptocurrency, may be incorporated by retail location **124** into the retail location **124**'s payment platform. Next, in step **306**, operation of the retail cryptocurrency transaction financial network **100** is undertaken once at least one API **122** has been integrated into retail location **124**'s payment platform. Next in step **308** is the operation, by retail location **124**, of at least one point of sale terminal **110** linked to the cryptocurrency transaction financial network **100**.

[0116] Once steps **302-308** have been undertaken, network/platform **100** then proceeds with the steps of verifying a user's signature on a payment card instantly. These verification steps start with step **310**, i.e., receiving data (e.g., any one or a combination of: biometric information **112B**, coded information **112E**, and/or data **112F**) from at least one payment card **106**, searching for data (e.g., text data **114**) previously supplied by the user (step **312**), where the data may have been obtained by an Optical Character Recognition (OCR) process during the user's application for at least any one or more of: a credit card, debit card, cryptocurrency payment card or digital wallet, and where the data may be sent from at least one device **112**, submitting (step **314**) the received data to a centralized database, such as, in one aspect of an embodiment of the present invention, database **104**, comparing the received data with data located within the centralized database (e.g., text data **114**) (step **316**), matching the received data with previously supplied data already within the

centralized database (e.g., text data **114**) (step **318**), extracting text data **114** from the previously supplied data already within the centralized database **104** (step **320**), and encoding text data **114** from the previously supplied data already within the centralized database (step **322**).

[0117] In another aspect of an embodiment of the present invention, the received data in step **312** may include any one of: an entire captured signature image, a portion of a captured signature image.

[0118] In another aspect of an embodiment of the present invention, the encoded text data **114** in step **322** may be encoded into a cryptographically signed binary file **118**.

[0119] In another aspect of an embodiment of the present invention, the validity of the cryptographically signed binary file **118** may be confirmed by comparing its signature to an expected signature based on supplied parameters.

[0120] In another aspect of an embodiment of the present invention, process **300** may next comprise the step of transmitting signed binary file **118** to a secure element **124** where it may be housed (step **324**). In another aspect of an embodiment of the present invention, secure element **124** may be a computer chip. In another aspect of an embodiment of the present invention, secure element **124** may be configured and enabled to be read via Near-field Communication (NFC) for verification purposes without a wireless network being present or being used.

[0121] Following step **324**, processor **100** then determines whether a new transaction is to be undertaken in step **326**. If so, process **300** proceeds to step **310**. If not, the process ends.

[0122] A further aspect of an embodiment of the present invention contemplates use of a computer program product comprising a computer usable medium having computer executable instructions stored therein for operation of at least one processor **102**, which, in an aspect of an embodiment of the present invention, may be configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes in the implementation of process **300**'s steps outlined above.

[0123] Referring now to FIG. **4**, a process **400** outlining a computer-implemented method for implementing operation of a cryptocurrency transaction financial network/platform **200** is shown according to another set of aspects of embodiments of the present invention. In an aspect of an embodiment of the present invention process **400** contemplates use of at least one processor **202** for this implementation which may involve executing on at least one processor **202** configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, the steps of: activating at least one account within said network (step **402**), where the activation may be done by a user's generation of a mnemonic phrase **214**, where mnemonic phrase **214** may include at least one sequence of words. Process **400** may then proceed to step **404**, i.e., using the at least one sequence of words for account recovery purposes, which then proceeds to step **406** which would involve the wireless transfer of any one or more of: at least one Key Signature pin **208A**, platform-related metadata **208D**, where said any one or more of at least one Key Signature pin **208A**, platform-related metadata **208D** may be transferred via NFC to a secure element **216** inside of a payment card **206**. After this, process **400** proceeds to step **408** which is the utilization of at least one exchange to fund at least one account, where said at least one exchange supports said cryptocurrency transaction financial network.

[0124] Process **400** then proceeds to the step of purchasing certain currency through an exchange with a fiat credit card (step **410**), followed by step **412** which involves the instant reflection of settled funds in a user's account. After this, process **400** proceeds to step **414** which involves sending the settled funds directly to at least one account of the cryptocurrency transaction financial network **200**.

[0125] Next, process **400** proceeds to the step of generating at least one transaction for specific amounts of cryptocurrency used within said cryptocurrency transaction financial network (step

416), after which data related to the transfer of funds from at least one account to at least another account is encoded as a QR Marker/QR code (step **418**). The QR Marker/QR code may then be scanned to initiate exchange of currency/cryptocurrency (step **420**) and the cryptographic signature **226** belonging to at least one account may then be validated (step **422**). After step **422**, processor **202** determines whether, in step **424** another account is to be activated. If so, process **400** proceeds to step **402**. If not, process **400** ends.

[0126] A further aspect of an embodiment of the present invention contemplates use of a computer program product comprising a computer usable medium having computer executable instructions stored therein for operation of at least one processor **202**, which, in an aspect of an embodiment of the present invention, may be configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes in the implementation of process **400**'s steps outlined above.

[0127] Additional aspects of embodiments of the present invention contemplate a computer program product comprising a computer usable medium having computer executable instructions stored therein for causing a computer processor **202** to implement operation of a cryptocurrency transaction financial network/platform, where the computer executable instructions may include computer readable program code for undertaking or implementing the steps of process **400** outlined above.

[0128] Referring now to FIG. 5, a transaction flow **500** between a payment card **106** and a portable device **112** and/or a point-of-sale device **110** is shown according to an aspect of an embodiment of the present invention.

[0129] Process **500** begins at the point at which a user is ready to pay for certain goods or services in a desired transaction on a merchant device such as portable device **112** (such as the user's mobile device e.g., phone, laptop, tablet, or the like) or at a retail merchant location **122**'s POS device **110**. In step **502**, the user then brings payment card **106** close enough to the merchant device to enable electronic communication between payment card **106** and merchant device via NFC communication. Once contact has been made, the merchant device receives the amount on payment card **106** (step **504**) and the merchant device determines, in step **506** as to whether there are sufficient funds on payment card **106** for the desired transaction. If there are sufficient funds, the process goes either to step **508** or step **512** (see below). If there are insufficient funds, the process ends. In an aspect of an embodiment of the present invention, process **500** may include step **508** where the user may be prompted to provide a signature on the merchant device to validate their ability to use payment card **106**. The merchant device may then communicate with network **100** or **200** to determine whether there is a match with signature image **116**. If so, then process **500** proceeds to step **512** where the cryptocurrency on payment card **106** is converted to the fiat currency amount needed for the desired transaction. If there is not a match, the user may be prompted again to re-enter the user's signature in step **510**. If there is a match, then the process goes to step **512**. If there is no match, then the process ends in a number of ways, including providing the user with an error message, a message that the transaction is not authorized, or a message that the signature did not match.

[0130] Following step **512**, process **500** then proceeds to step **514** where the converted amount is transmitted to the merchant device. The user, in step **516**, is then presented with a balance of the remaining cryptocurrency funds on payment card **106** on portable device **112**. The merchant device then, in step **518** inquires as to whether the user wants to conduct another transaction. If so, process **500** proceeds to step **506**, if not, the process ends.

[0131] Additional aspects of embodiments of the present invention contemplate a computer program product comprising a computer usable medium having computer executable instructions stored therein for causing a computer processor resident on the merchant device to implement operation of a cryptocurrency transaction financial network/platform, where the computer

executable instructions may include computer readable program code for undertaking or implementing the steps of process **500** outlined above.

[0132] Referring now to FIGS. **6A-6D**, and **7**, displays of a portable device **600** of a cryptocurrency transaction financial network/platform (such as **100** or **200**) showing display buttons and the process **700** of activating and account/transacting a transaction are all shown according to aspects of embodiments of the present invention.

[0133] Process **700** begins following download of the application (“app”) associated with network **100** or **200** onto portable device **600** (which may be the same or similar to portable device **106**, **206**). At step **702** a user is asked whether this is a new account. The user may then select display button **602** for a new account. If the user intends to import an existing account, then button **604** is selected. Next, the user is prompted in step **704** to enter a mnemonic phrase such as mnemonic phrase **214** into display box **606**. The user may also be required to provide additional information or data. Process **700** then proceeds to activation step **706** with the user's selection of button **608**. The user could also stop the process by selecting button **610**. Device **600** may then in step **708** generate an RSA key **612** (such as key **108A** or **208A**) or a QR code **614** (such as QR Marker/QR code **220**).

[0134] Payment card **106** or **206** in step **710** is then scanned for the generated keys/QR code to be transmitted (step **712**) to payment card **106** or **206** via NFC connection and stored therein. Once done, the data is all transmitted to the cryptocurrency transaction financial network/platform (such as **100** or **200**) in step **714** with the account information displayed **620**.

[0135] The cryptocurrency's value is based on market price. The currency can be purchased through an exchange with a fiat credit card. Settled funds are instantly reflected in a user's account and can be sent directly to any other cryptocurrency account.

[0136] The user may then in step **716** be presented via button **618** with the option of funding the new account by way of cryptocurrency transfer or fiat bank funding. If the user opts to fund the account, process **700** proceeds to step **718**. If not, the process ends.

[0137] At step **718** may fund the account using cryptocurrency (button **624**) or use a fiat bank account (button **626**). Next, at funding step **720**, the different displays for funding, **630** for fiat funding; **632** for cryptocurrency transfer/purchase, are displayed for the user to select and input requisite information. Funding using fiat accounts would engage transfer of same and conversion into the cryptocurrency equivalent. Thus, in an aspect of an embodiment of the present invention, payment card is funded. Once the funding is done (step **722**), the amount funded is displayed (**620**), and the user is presented with the option (step **724**) as to whether to transfer additional funds. If so, process **700** proceeds to step **726**, if not, the process ends.

[0138] At step **726**, the user is asked whether the transfer is for a transaction (e.g., purchase). If it is a purchase, then process **700** proceeds to step **728** where a merchant creates a transaction (e.g., by scanning an article and finalizing the purchase) and a QR code is generated reflecting the transaction. User may then scan the merchant-generated QR code **636** (step **730**) onto portable device or may then begin the process of payment by selecting the send or scan button **638** to, in step **732**, to scan payment card (e.g. payment card **106** or **206**). In an aspect of an embodiment of the present invention, portable device, via NFC communication, may read the amount on payment card to determine whether enough funds are present to pay for the transaction (step **734**). In another alternative aspect, the payment card's information may be sent to the cryptocurrency transaction financial network/platform (such as **100** or **200**) to approve the transaction (step **734**). If approved/enough funds exist, the transaction is completed (step **736**). If there are insufficient funds, then the process may stop, error messages may be sent or insufficient funds messages may be displayed.

[0139] Additional aspects of embodiments of the present invention contemplate a computer program product comprising a computer usable medium having computer executable instructions stored therein for causing a computer processor resident on the merchant device or a portable

device to implement operation of a cryptocurrency transaction financial network/platform, where the computer executable instructions may include computer readable program code for undertaking or implementing the steps of process 700 outlined above.

[0140] Aspects of embodiments of the present invention contemplate computer implemented methods, processes, systems, computer program product (comprising a computer usable medium having computer executable instructions stored therein for causing a computer processor to perform certain operations), and devices directed to the full operation and functionality of a system configured towards implementation and operation of a retail cryptocurrency transaction financial network and/or devices as disclosed above.

[0141] In an aspect of an embodiment of the present invention, the term “module” may represent self-contained computer hardware. In another aspect of an embodiment of the present invention, the term “module” may represent computer hardware on a designated computer chip or separate computer chips. In yet another aspect of an embodiment of the present invention, the processor may be configured to perform tasks not undertaken by the module(s) disclosed herein. In a further aspect of an embodiment of the present invention, the modules may be hardware resident on one chip, component, separate components, a remote server, database, some or each of which (or all of which, in one aspect of an embodiment of the present invention) may be separate and distinct from the device, or any combination thereof. In one aspect of an embodiment of the present invention, the processor may be configured to coordinate, implement and/or assign tasks to, from and/or among the module(s). In a further aspect of an embodiment of the present invention, module components may also, in an operational context, be components of other modules.

[0142] In a further aspect of an embodiment of the present invention, steps, processes, operations or methods undertaken by the systems and/or system components, as discussed above, may be implemented by execution, on one or more servers or processors configured to perform a predefined set of basic operations in response to receiving a corresponding basic instruction selected from a predefined native instruction set of codes. This native instruction set of codes or machine language instruction codes may be built into servers/processors of system components. As such, different operations contemplated by the disclosure above, may be made possible by the selection of machine codes from specific machine language instruction codes. Additional complex operations may be made possible by the combination of different sets of machine language instruction codes.

[0143] Further aspects of embodiments of the present invention contemplate the use of non-transitory computer programmable product and computer-implemented methods for the implementation of the different processes outlined above. The same may be found installed on any or all of the components discussed in this application including, without limitation, the mobile device(s), registries, etc.

[0144] Yet further aspects of embodiments of the present invention contemplate execution of computer code resident on devices, system of devices, and communication media such as wide area networks, the internet etc. enabling the contemplated transactions.

[0145] Although this present invention has been disclosed with reference to specific forms and embodiments, it will be evident that a considerable number of variations may be made without departing from the spirit and scope of the present invention. For example, steps may be reversed, equivalent elements may be substituted for those specifically disclosed, certain features of the present invention may be used independently of other features, different aspects of embodiments of the invention may be used across other aspects and/or embodiments-all without departing from the present invention as outlined above, in the appended figures and the claims presented below.

Claims

- 1.** A system configured towards implementation of a retail cryptocurrency transaction financial network, comprising: at least one processor configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes; at least one database; at least one payment card, wherein said at least one payment card comprises of any one or more of: a Key Signature Pin, a biometric fingerprint sensor, a verification and authentication module, a transceiver, memory; a transceiver; and at least one point of sale (POS) device, wherein said POS device verifies a user's signature on said at least one payment card, wherein all components of said system are any one of: in communication with each other, in communication with at least one other element of said system.
- 2.** The system of claim 1, further comprising of at least one portable device, in communication with any one or more of: said at least one processor, at least one database, at least one POS, at least one payment card, wherein said at least one portable device comprises of any one or a combination of: a biometric module, biometric information, a transceiver module, a computer processor unit, coded information, memory.
- 3.** The system of claim 1, further comprising of bioprint data stored on said memory of said at least one payment card.
- 4.** The system of claim 3, wherein said bioprint data is encoded into a cryptographically signed binary file.
- 5.** The system of claim 4, further comprising at least one stored element, wherein said cryptographically signed binary file is transmitted to said at least one stored element and wherein said at least one stored element may be read via Near-Field Communication (NFC).
- 6.** A computer-implemented method for implementing operation of a retail cryptocurrency transaction financial network, comprising executing, on at least one processor configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, steps of: enabling purchase and installation of least one type of cryptocurrency as designated by the retail cryptocurrency transaction financial network; incorporation, by a retail location, of at least one application programming interface (API) linked or relevant to the at least one type of cryptocurrency into the retail location's payment platform; verification and authentication of a bioprint as received by at least one payment card, wherein said verification and authentication is undertaken by a verification and authentication module of said at least one payment card; and operation of the retail cryptocurrency transaction financial network once the at least one API has been integrated with said retail location's payment platform.
- 7.** The computer-implemented method of claim 6 undertaken by said verification and authentication module of said at least one payment card, comprising steps of: receiving data on said at least one payment card; searching for data previously supplied by said user, wherein said data is stored on memory of said at least one payment card; comparing said received data with previously stored data located on said memory of said at least one payment card; and determining whether a match exists between said received data with previously supplied data already stored within said memory of said at least one payment card.
- 8.** The computer-implemented method of claim 7, further comprising the step of transmitting confirmation of said match to a secure element where it is housed.
- 9.** The computer-implemented method of claim 8, wherein said secure element is configured and enabled to be read via Near-field Communication (NFC) for verification purposes without a wireless network being present or being used.
- 10.** A computer program product comprising a non-transitory computer readable medium having computer executable instructions stored therein for implementing operation of a retail cryptocurrency transaction financial network, comprising executing, on at least one processor

configured to perform a predefined set of basic operations in response to receiving a corresponding basic computer executable instruction selected from a predefined native instruction set of codes, computer readable program code for: enabling purchase and installation of least one type of cryptocurrency as designated by the retail cryptocurrency transaction financial network; incorporation, by a retail location, of at least one application programming interface (API) linked or relevant to the at least one type of cryptocurrency into the retail location's payment platform; verification and authentication of a bioprint as received by at least one payment card, wherein said verification and authentication is undertaken by a verification and authentication module of said at least one payment card; and operation of the retail cryptocurrency transaction financial network once the at least one API has been integrated with said retail location's payment platform.

11. The computer program product of claim 10, wherein said computer readable code for operation of said verification and authentication module of said at least one payment card, comprising computer readable program code for: receiving data on said at least one payment card; searching for data previously supplied by said user, wherein said data is stored on memory of said at least one payment card; comparing said received data with previously stored data located on said memory of said at least one payment card; and determining whether a match exists between said received data with previously supplied data already stored within said memory of said at least one payment card.

12. The computer program product of claim 11, further computer readable code for transmitting confirmation of said match to a secure element where it is housed.

13. The computer program product of claim 12, wherein said secure element is configured and enabled to be read via Near-field Communication (NFC) for verification purposes without a wireless network being present or being used.
