Conversion of Air-Time Credit to Other Forms of (Tradeable) Credit

Field of the Invention

This invention relates to the fields of telecommunications and commerce. In particular, this invention provides a system and method for the conversion of air-time credit, and in particular pre-paid air-time credit for use of a mobile phone, into funds for completing financial transactions.

Background Art

There has long been a need for real-time payment capabilities any time and anywhere. Credit cards offer the convenience of paying with the use of a credit card but the merchant must have a point-of-sale (POS) terminal, and must be on-line to the credit card provider infrastructure to transact payments. This however falls short of enabling still a much larger commercial model of allowing both a buyer and a merchant from trading any time and anywhere.

The mobile phone community is quickly learning to use a mobile phone as a means of identification, and with the use of some authentication methods (mPINs) allow a subscriber to approve trade transactions much like signing their credit card purchase slip.

In a highly pre-paid mobile phone network market such as the Philippines, a mobile phone network operator can have multiple channels for distributing and selling air-time credits. This can be in the form of a formal sales network/distribution using physical pre-paid cards, vending machines dispensing physical cards, point-of-sales (POS) terminals printing necessary information for air-time credit top-up. All of these systems are voucher or physical card based systems which contain information allowing a subscriber to top-up his mobile phone account.

There is also a second form of provision of air-time credit which is not based on a voucher, physical card, or a physical record, which is known as electronic top-up.

With electronic top-up, a mobile phone network operator provides an interface to an authorized distributor to send instructions directly to the carrier to 'load' or top-up the account of a mobile subscriber directly. This approach bypasses the need for a carrier to maintain physical inventories of pre-paid cards.

A content provider for a carrier is a third party service provider who delivers value added services (VAS) to the mobile community. These VAS services can come in many forms including text content, other content such as files and executable applications, and messaging services. Text content is the most basic form of VAS including content such as a daily horoscope, love horoscope, business horoscope, etc. Other content includes files and programs such as ringtones / polytones, screen savers, etc. These require a higher level of technological capabilities on both the carrier and the content providers to send such content. Messaging services are differentiated from text content, as the messages serve a specific purpose for a specific recipient – as opposed to a general TXT message intended for the public. Services in this category could be Instant Messaging, Stock Alerts, Mobile Banking alerts, etc.

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

Disclosure of the Invention

This invention provides a method and system for conversion of prepaid air-time credits to monetary or goods or services value.

The invention was developed to provide a method for conversion of air-time credit into other forms of credit that can be used to purchase goods and or services such as payment for taxi fare or purchase of flowers from a merchant or for conversion into cash.

In accordance with one aspect of the present invention there is provided a transaction system for use by telecommunications subscribers operating telecommunications devices, said transaction system having access to a database holding subscriber account information including subscriber details, telecommunications device details, and subscriber account balance;

said transaction system including input means for receiving instructions from a subscriber to make a payment of an amount to a party and/or in return for supply of merchandise or services, or credit therefor;

said transaction system including processor means to execute an authentication routine to authenticate the identity of said subscriber, and process the debiting of said amount from the subscriber account balance if the subscriber is authenticated, and the subscriber account balance less said amount is within a predetermined credit limit for said subscriber, and if the party is recognised or merchandise or services, or credit therefor is recognised as being available;

said transaction system including means to dispense payment of said amount to said party or to provide the merchandise, services or credit therefor to said subscriber, or to arrange for the provision thereof via one or more third parties.

The merchandise may be physical goods or services that is capable of accepting the airtime credit. The credit can be credit for any of these, or for other services. The party may supply the merchandise, services, or credit for the same, or the operator of the transaction system may supply the merchandise, services, or credit for the same. The system of the invention also contemplates payment to a party, as in the form of a donation. Preferably the availability of merchandise, services, or credit for the same, and the party to which payment is to be made is recorded in the transaction system. Alternatively, the transaction system may make an enquiry with the party to ascertain availability. Where the operator of the transaction system is providing the merchandise, services, or credit for the same, the transaction system will conduct an internal check.

Preferably said telecommunications subscribers operate said telecommunications devices through use of pre-paid air-time credit, and said subscriber account balance comprises subscriber air-time credit balance. In this case the

predetermined credit limit is zero, and such data need not be stored in the database containing subscriber account information.

Preferably said transaction system accumulates transacted air-time credit and makes blocks of air-time credit available for purchase.

Alternatively, where credit is extended to subscribers, each subscriber's credit limit is recorded with the subscriber account information contained in said database.

Preferably said transaction system incorporates said database.

Preferably said database includes a subscriber PIN, where said subscriber inputs their PIN which is used by said processor means in said authentication routine to authenticate the identity of said subscriber.

Preferably said input means also receives instructions from said subscriber regarding the merchandise, services or credit therefor and/or the party providing said the merchandise, services or credit therefor, and when said means to dispense payment pays said amount to said party, said transaction system provides particulars of the merchandise, services or credit therefor to said party. Following this, the party can then provide the merchandise, services or credit therefor to the subscriber.

Alternatively said transaction system is the merchandise or services provider, and said input means also receives instructions from said subscriber regarding the merchandise, services or credit therefor.

Preferably said transaction system receives instructions to debit an amount from said subscriber by short message service (SMS).

Preferably each item of merchandise, services or credit therefor provided by each party is allocated a unique identifier. In this manner the subscriber can identify both the merchandise, services or credit therefor and the party by a single unique

identifier. The alternative would be for each party to have a unique identifier and each merchandise, services or credit therefor being provided by a further identifier.

Preferably the instructions are preformatted in the form <unique identifier> <amount> and sent to a predetermined short code allocated to the transaction system.

Also in accordance with the present invention there is provided a method for conversion of monetary value forming subscriber account balance allocated to telecommunications subscribers operating telecommunications devices with a telecommunications provider, to payment of an amount to a party and/or for supply of merchandise or services, or credit therefor; said method including said telecommunications provider receiving instructions from a subscriber to make a payment of an amount to said party or in return for supply of merchandise or services, or credit therefor, said method including identifying the s subscriber, checking that the subscriber has sufficient credit to cover said amount, and checking that said party is recognised and/or the merchandise or services, or credit therefor is available; and if all checks are true, debiting said amount from the subscriber account balance, and arranging for or making payment of said amount or arranging for supply or supplying said merchandise or services or credit therefor.

The merchandise may be physical goods or services availed of from merchants with the capability to accept airtime credit. The credit can be credit for any of these, or for other services. The party may supply the merchandise, services, or credit for the same, or the operator of the transaction system may supply the merchandise, services, or credit for the same. The method of the invention also contemplates payment to a party, as in the form of a donation.

Preferably said method includes said telecommunications subscribers operating said telecommunications devices through use of pre-paid air-time credit, and said subscriber account balance comprises subscriber air-time credit balance. In this

case the predetermined credit limit is zero, and such data need not be stored in the database containing subscriber account information.

Preferably said method included said telecommunications provider accumulating transacted air-time credit and making blocks of air-time credit available for purchase.

Alternatively, where credit is extended to subscribers, each subscriber's credit limit is recorded with the subscriber account information contained in said database.

Preferably said method includes authenticating the identity of said telecommunications subscriber by requiring said telecommunications subscriber to enter a subscriber PIN, which is compared with a PIN stored for said subscriber and used in an authentication routine to authenticate the identity of said telecommunications subscriber.

Preferably said method includes also receiving instructions from said subscriber regarding the merchandise, services or credit therefor and/or the party providing said the merchandise, services or credit therefor, and when said amount is paid to said party, said method includes providing particulars of the merchandise, services or credit therefor to said party. Following this, the party can then provide the merchandise, services or credit therefor to the subscriber.

Alternatively said method also includes receiving instructions from said subscriber regarding the merchandise, services or credit therefore sought by said subscriber, and said method includes said telecommunications provider providing said merchandise, services, or credit therefor.

Preferably in said method, said transaction system receives instructions to debit an amount from said subscriber by short message service (SMS).

Preferably in said method, each item of merchandise, services or credit therefor provided by each party is allocated a unique identifier. In this manner the

subscriber can identify both the merchandise, services or credit therefor and the party by a single unique identifier. The alternative would be for each party to have a unique identifier and each merchandise, services or credit therefor being provided by a further identifier.

Preferably the instructions are preformatted in the form <unique identifier> <amount> and sent to a predetermined short code allocated to the transaction system.

Preferably said method includes said telecommunications provider accessing a transaction system having access to a database holding subscriber account information including subscriber details, telecommunications device details, and subscriber account balance;

said transaction system including input means for receiving said instructions from said subscriber to make a payment of said amount to said party or in return for supply of merchandise or services, or credit therefor, and debit said amount from the subscriber account balance;

said transaction system including processor means to execute an authentication routine to authenticate the identity of said subscriber, and process the debiting of said amount from the subscriber account balance if the subscriber is authenticated, and the subscriber account balance less said amount is within a predetermined credit limit for said subscriber;

said transaction system including means to dispense payment of said amount to said party or to provide the merchandise, services or credit therefor to said subscriber, or to arrange for the provision thereof via one or more third parties.

Preferably the availability of merchandise, services, or credit for the same, and the party to which payment is to be made is recorded in the transaction system. Alternatively, the transaction system may make an enquiry with the party to ascertain availability. Where the operator of the transaction system is providing the merchandise, services, or credit for the same, the transaction system will conduct an internal check.

Best Mode(s) for Carrying Out the Invention

A preferred embodiment of the invention will now be described with reference to figure 1 which illustrates a transaction system for converting air-time credit into monetary value or goods or services, and with reference to three specific examples of such transactions.

This invention provides a system and method for mobile phone users (and merchants) to complete trade/sales transactions anytime and anywhere.

As the mobile phone community matures in the use of and reliance on messaging services, other more specific services than text, content and messaging services can and are being delivered. This embodiment of the invention is concerned with provision of other services in the form of full mobile banking services and merchant services, etc. Merchant services include the sale of goods and services through SMS messaging as will be described in the following examples. Hitherto, a merchant could normally only sell pre-paid services accessible physically at a store and selling a pre-paid card. Services available in the form of pre-paid cards can be on-line game credits, gambling, mobile air-time credits, internet services, etc. Using the mobile phone, in accordance with the system and method of the invention, on-line sale to the mobile phone subscriber of these pre-paid services is possible. Other forms of merchant services can include delivering medicines ordered via SMS. Groceries, online dating, limousine, taxi, tour reservations, etc can all be delivered.

Some sellers of air-time credit are also content providers. This embodiment of the invention provides a system and method allowing a distributor of air-time credit who may or may not be a content provider, to convert air-time credit to monetary or goods or services value. Through this embodiment, the distributor of air-time credit can sell or dispense goods and services (such as pre-paid cards and other services) using a subscribers air-time credits as a form of payment (currency). The air-time credits used as payment are then resold through various platforms of the distributor for selling air-time credits. Examples of the system and method, in operation, will now be described.

The transaction system indicated generally at 11 includes an application server 13 having access to a database 15 which holds subscriber account information. The subscriber account information includes at least subscriber details such as subscriber name or identity and subscriber authentication information, subscriber telecommunications device details such as device type and device identification number or phone number, and subscriber account balance.

A mobile phone service provider operates a cellular switching network 17 usually having a plurality of transceiver towers 19. A subscriber having a telecommunications device such as a mobile phone 21 is able to access the mobile phone service via the transceiver towers 19, either through being extended credit by the mobile phone service provider, or after having purchased pre-paid credit and having registered with the mobile phone service provider. Where the mobile phone service provider is to implement the transaction system 11 of the embodiment, the subscriber telecommunications device details are recorded in the database 15. The mobile phone service provider has a billings system 23 interfaced with the cellular switching network 17, which tracks the credit level and status of subscribers, and issues invoices where the mobile phone service provider provides credit to subscribers.

The mobile phone service provider includes short message service (SMS) among the services provided to subscribers, and the transaction system 11 has a short message service centre 25 (SMSC) associated therewith.

The transaction system 11 receives an SMS message from a subscriber, sent to a short code corresponding to the SMSC 25 associated with the application server 13. The SMS message identifies the action required and either the monetary credit to be applied or where blocks of credit must be applied, the number of blocks. The action required may be indicated by a unique identifier that corresponds to a merchandise or service provider and the specific transaction available through that provider. The merchandise or service provider will have stipulated whether the subscriber indicates a monetary amount or unit amount in the SMS message.

Three examples of the embodiment in operation will now be discussed.

Example 1 - Subscriber purchases on-line gaming pre-paid credits

In this example, a network gaming enthusiast may be playing a game at home but is unwilling to get up from his seat and leave the game to purchase a pre-paid card to continue playing his game. Through the use of mobile trade capabilities implemented by the embodiment, he is able to purchase game credits with the transaction being set against his mobile phone airtime credits. The mobile phone account air-time credits are in effect converted into another form of commercial credits – in this case, game credits.

The transaction system receives instructions in a preformatted SMS message from the subscriber to send instructions to debit his air-time credits in exchange for an on-line gaming credit. The message sent may be as follows:

Sample SMS sent:	***Mobius 150***
Message sent to:	**2468**

Where **Mobius** is the name of the on-line game credit which the subscriber wishes to avail of, **150** represents the denomination (150 peso card), and **2468** is the short code assigned to the transaction system application to handle such conversion

In the transaction system, the executed steps are as follows:

- The cellular switching network routes the message to the appropriate SMSC
- The SMSC routes the message to the Paysetter Application Server as identified by the short code 2468
- The application server processes the message as follows:
    - Authenticates that the keyword **Mobius** is valid
    - Authenticates that the value **150** is valid
    - Paysetter Application Server then communicates with the carrier Billing system to debit the subscriber account by **150** of his airtime

credits

- If the debit instruction is successful, Paysetter Application Server retrieves an ePIN from its database for **MOBIUS 150**
- Paysetter Application Server then formats an appropriate SMS message containing the ePIN information and sends this to the SMSC with the identification of the mobile subscriber as recipient

- The carrier then delivers this message to the subscriber mobile phone. *example : Your transaction is successful – please enter PIN : ax63400ym to continue playing online game RAGNAROK*

Example 2 - Subscriber purchases a flowers directly from their mobile phone

In this example a mobile phone user might want to purchase a bouquet of roses as a gift to a third person. With the use of his mobile phone, he can authorize the exchange of his airtime credits for other value added services anytime and anywhere. Through the invention, the mobile phone account air-time credits are converted into another form of commercial credits or value in this case other mobile value added services.

The transaction system receives instructions in a preformatted SMS message from the subscriber to send instructions to debit his air-time credits in exchange for flowers to be delivered. The message sent may be as follows:

Sample SMS sent: ***12 ROSES Bernadette 03-03 17 Upper Circular Road <PIN>***

Message sent to: **2468**

Where **12ROSES** is the keyword to identify that the subscriber wishes a bouquet of 12 roses to be sent to **Bernadette with address at 03-03 Upper Circular road 3230**, and **2468** is the short code assigned to the VAS application to handle the flower delivery service.

In the transaction system, the executed steps are as follows:

- The cellular switching network routes the message to the appropriate SMSC
- The SMSC routes the message to the Paysetter Application Server as

identified by the short code 2468

- The application server processes the message as follows:
    - Authenticates that the keyword **12ROSES** is valid and PIN is valid
    - Paysetter Application Server then communicates with the carrier Billing system to debit the subscriber account by **250** pesos of his airtime credits (cost of roses and delivery)
    - If the debit instruction is successful, Paysetter Application Server then formats an appropriate SMS message containing the the ringtone data and sends this to the SMSC with the identification of the mobile subscriber as recipient
- The carrier then delivers sends a message to the sender that the bouquet of roses will be delivered on mm/yy/dd time:hh:mm

If the distributor is not the content provider providing the flowers then this same model can be used to enable third-party content providers from using this same infra-structure. Other third party content providers can sell any goods services using this infrastructure as a payment gateway.

Example 3 - Subscriber makes a donation to a disaster / calamity fund.

Natural disasters and calamities occur daily. There will always be people who are less fortunate and needy of assistance. While an average person may contribute some financial donations to his Church, there will always be occasions for 'additional' financial donations in emergency cases. In this example, a mobile phone user can authorize deductions from his mobile phone air-time credits as part of a donation to a needy cause. Through the invention, the mobile phone account air-time credits are converted into another form of commercial credit, in this case into cash.

The transaction system receives instructions in a preformatted SMS message from the subscriber to send instructions to debit his air-time credits as a donation to a disaster fund. The message sent may be as follows:

Sample SMS sent:	***REDCROSS 200***
Message sent to:	**2468**

Where **REDCROSS** is the keyword to identify that the subscriber is making a donation to a disaster fund, **200** is the amount which the subscriber wishes to contribute to the fund, and **2468** is the short code assigned to the VAS application to handle the donation to the **REDCROSS**.

In the transaction system, the executed steps are as follows:

- The cellular switching network routes the message to the appropriate SMSC.
- The SMSC routes the message to the Paysetter Application Server as identified by the short code 2468.
- Paysetter Application Server processes the message as follows:
    - Authenticates that the keyword **REDCROSS** is valid;
    - Paysetter Application Server then communicates with the carrier Billing system to debit the subscriber account by **200** pesos of his airtime credits;
    - If the debit instruction is successful, Paysetter Application Server creates an appropriate log of the amount donated and the subscriber who made the donation;
    - Paysetter Application Server then formats an appropriate SMS message confirming the amount deducted and thanking the subscriber.
- The carrier then delivers this message to the subscriber mobile phone *example : your donation has been received with thanks by the RED CROSS*
- At the end of the week (or month) as the designated agreement with the disaster fund manager, the service provider settles the appropriate amount due.

In all three examples, the accumulated air-time credits are re-sold to the market utilizing the distributor's various platforms as an authorized air-time credit distributor.

The above are but a few examples of how a mobile phone user is enabled to do a financial transaction / trade with the use of their mobile phone.

In all three examples, the subscriber is able to trade using their mobile phone and air-time credit. The service provider has provided a method and system to enabled the subscriber to use their air-time credit as a form of currency for mCommerce/trade. The service provider accepts the subscriber's air-time credit in exchange for an alternative form of pre-paid service or monetary value. The service provider accumulates the air-time credits through this activity, which can be subsequently re-sold.

The embodiment of the invention is intended to be implemented by a seller of mobile phone air-time credits through many existing products. It also provides various network grade applications enabling mobile phones to perform numerous value added services from simple messaging, user authentication, up to transfer of airtime credits from one mobile subscriber to another.

It should be appreciated that the invention is not limited to the specific embodiment described herein, and that changes may be made without departing from the spirit and scope of the invention.

The Claims Defining the Invention are as Follows

1. A transaction system for use by telecommunications subscribers operating telecommunications devices, said transaction system having access to a database holding subscriber account information including subscriber details, telecommunications device details, and subscriber account balance; said transaction system including input means for receiving instructions from a subscriber to make a payment of an amount to a party and/or in return for supply of merchandise or services, or credit therefor; said transaction system including processor means to execute an authentication routine to authenticate the identity of said subscriber, and process the debiting of said amount from the subscriber account balance if the subscriber is authenticated, and the subscriber account balance less said amount is within a predetermined credit limit for said subscriber, and if the party is recognised or merchandise or services, or credit therefor is recognised as being available; said transaction system including means to dispense payment of said amount to said party or to provide the merchandise, services or credit therefor to said subscriber, or to arrange for the provision thereof via one or more third parties.

2. A method for conversion of monetary value forming subscriber account balance allocated to telecommunications subscribers operating telecommunications devices with a telecommunications provider, to payment of an amount to a party and/or for supply of merchandise or services, or credit therefor; said method including said telecommunications provider receiving instructions from a subscriber to make a payment of an amount to said party or in return for supply of merchandise or services, or credit therefor, said method including identifying the s subscriber, checking that the subscriber has sufficient credit to cover said amount, and checking that said party is recognised and/or the merchandise or services, or credit therefor is available; and if all checks are true, debiting said amount from the subscriber account balance, and arranging for or making payment of said amount or arranging for supply or supplying said merchandise or services or credit therefor.