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**SOUTH AFRICAN  
PROVISIONAL PATENT APPLICATION**

Title:  
"DIGITAL MEDIA MANAGEMENT"

Patent Application No: 2010/06917

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Applicant(s):  
MOBILE GAME CARD APPLICATIONS (PTY) LTD

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VS Ref No. P2177ZA00/MVS/tj



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REPUBLIC OF SOUTH AFRICA

PATENTS ACT, 1978

## APPLICATION FOR A PATENT AND ACKNOWLEDGEMENT OF RECEIPT

(Section 30(1) – Regulation 22)

The grant of a patent is hereby requested by the undermentioned applicant on the basis of the present application filed in duplicate.

OFFICIAL APPLICATION NO	
21	01

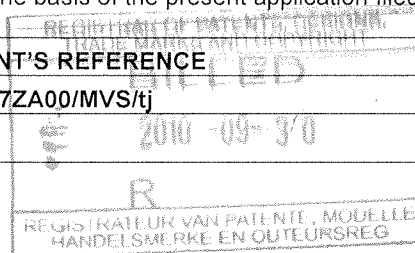
2010/06917

FULL NAME(S) OF APPLICANT(S)	
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71	MOBILE GAME CARD APPLICATIONS (PTY) LTD
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AGENT'S REFERENCE

P2177ZA00/MVS/tj



ADDRESS(ES) OF APPLICANT(S)

Suite 1, Old Dutch Square, Old Paarl Road, Belville, Western Cape Province, 7530, South Africa

TITLE OF INVENTION

54	DIGITAL MEDIA MANAGEMENT
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THE APPLICANT CLAIMS PRIORITY AS SET OUT ON THE ACCOMPANYING FORM P2

The earliest priority claimed is ZA

THIS APPLICATION IS FOR A PATENT OF ADDITION TO PATENT APPLICATION NO.

21 01

THIS APPLICATION IS A FRESH APPLICATION IN TERMS OF SECTION 37 AND BASED ON APPLICATION NO.

21 01

THIS APPLICATION IS ACCOMPANIED BY:

X	1a	A single copy of a provisional specification of 14 pages.
	1b	Two copies of a complete specification of pages.
	2a	Informal drawings of sheets.
X	2b	Formal drawings of 3 sheets.
	3	Publication particulars and abstract (form P8 in duplicate).
	4	A copy of figure of the drawings for the abstract.
	5	Assignment of invention (from the inventors) or other evidence of title.
	6	Certified priority document(s).
	7	Translation of priority document(s).
	8	Assignment of priority rights.
	9	A copy of form P2 and a specification of S.A. Patent Application.
	10	A declaration and power of attorney on form P3.
	11	Request for ante-dating on form P4.
	12	Request for classification on form P9.
	13	Statement on the use of indigenous biological resource, genetic resource, traditional knowledge or use
	14a	Request for delay of acceptance on form P4.
	14b	Request for expedited acceptance on form P4.

21 01 ZA

DATED 28 September 2010

Patent Attorney for Applicant(s)

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The duplicate will be returned to the applicant's address for service as proof of lodging but is not valid unless endorsed with official stamp.

REPUBLIC OF SOUTH AFRICA				PATENTS ACT, 1978			
REGISTER OF PATENTS							
OFFICIAL APPLICATION NO.			LODGING DATE: PROVISIONAL			ACCEPTANCE DATE	
21	01		22			43	
INTERNATIONAL CLASSIFICATION			LODGING DATE: COMPLETE			GRANTED DATE	
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71							
MOBILE GAME CARD APPLICATIONS (PTY) LTD							
APPLICANTS SUBSTITUTED						DATE REGISTERED	
71							
ASSIGNEE(S)						DATE REGISTERED	
71							
FULL NAME(S) OF INVENTOR(S)							
72							
ROUSSEAU, Johannes Petrus							
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ENGELBRECHT, Jonathan							
PRIORITY CLAIMED		COUNTRY		NUMBER		DATE	
N.B. Use international abbreviation for country. (See Schedule 4 of Regulations)		33		31		32	
TITLE OF INVENTION							
54							
DIGITAL MEDIA MANAGEMENT							
ADDRESS OF APPLICANT(S) / PATENTEE(S)							
Suite 1, Old Dutch Square, Old Paarl Road, Belville, Western Cape Province, 7530, South Africa							
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PATENT OF ADDITION NO.			DATE OF ANY CHANGE				
61							
FRESH APPLICATION BASED ON			DATE OF ANY CHANGE				

## REPUBLIC OF SOUTH AFRICA

## PATENTS ACT, 1978

PROVISIONAL SPECIFICATION  
(Section 30(1) – Regulation 27)

OFFICIAL APPLICATION NO		LODGING DATE		AGENT'S REFERENCE
21	01	22		P2177ZA00/MVS/tj
FULL NAME(S) OF APPLICANT(S)				
71	MOBILE GAME CARD APPLICATIONS (PTY) LTD			
FULL NAME(S) OF INVENTOR(S)				
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TITLE OF INVENTION				
54	DIGITAL MEDIA MANAGEMENT			

## DIGITAL MEDIA MANAGEMENT

### FIELD OF THE INVENTION

- 5 This invention relates to the management of digital media. In particular, but not exclusively, the invention relates to the creation, ownership and online transfer of ownership of digital media items.

### BACKGROUND TO THE INVENTION

10

Digital media (as opposed to analog media) are electronic media items that work on digital codes. Computers are capable of interpreting digital data as information and thus represent the predominating class of digital media processing machines. However, with the advances in the electronics  
15 industry, the number of devices capable of interpreting digital media has become numerous and broadly include, amongst others, personal computers, mobile computers, mobile phones and other mobile communication devices, as well as a vast selection of mobile media players.

- 20 Digital media items broadly include digital images; digital audio; digital video; digital software applications and other digital content that can be created, referred to and distributed via digital information processing machines.

In the remainder of this specification the term "digital item(s)" will be  
25 interpreted to mean any digital media item that can be created and transferred electronically between digital information processing machines, be it directly or over networks such as the Internet. The term "digital goods" will have a corresponding meaning.

Digital items are today predominantly created and distributed over the Internet and a large number of businesses trade in a variety of digital items online. As such, digital items have become valuable commodities and the control of unauthorized copying, transferring and file sharing has become problematic. The trading with and obtaining of digital items can typically be conducted from any Internet enabled device, including more and more frequently, Web or Internet enabled mobile phones and other mobile communications devices.

- 10 Digital Rights Management ("DRM") is a generic term for access control technologies that can be used by hardware manufacturers, publishers, copyright holders and individuals to limit the usage of digital content and devices. The term is used to describe any technology that inhibits uses of digital content not desired or intended by the content provider. DRM technologies attempt to control use of digital media by preventing access, copying or conversion to other formats by end users.

At present, the implementation of DRM for digital items such as images and media is handled by locking the data representing the items to the devices from which they were purchased and/or downloaded. This ensures that the data can only be accessed on those specific devices and without the items being capable of being transferred, shared or even modified.

It is estimated that the average consumer currently changes mobile communication devices at least once every 6 months. In addition, one in every three consumers own at least two mobile communication devices. This has the implication that they need to re-apply or, in some cases, re-purchase the digital items they previously owned and cannot access them on more than one mobile communication device at any given time.

30 In most known implementations of the digital goods industry, an item is defined within the system architecture. This item then forms the template and

can be duplicated and distributed an infinite number of times. These generic, non-unique items are then linked to user accounts by means of tracking how many copies of a given item template the user has, in terms of an ERD (Entity Relational Diagram) this is represented by a many to many relationship, meaning one user can have many items, however one item can belong to many users, to resolve this a specific relationship is defined that dictates that user x has y (quantity) copies of item z, such tracking is generally handled via an intersection entity table as illustrated in Figure "1". This has the implication that information is not tracked as unique entities but handled as virtual objects in the truest sense of the word. Items can therefore be manipulated to change the tracking value as defined above, this can have the result that items can be increased without the system managing the increase and with some out-of-system modification a user could potentially duplicate the item an infinite number of times by simply incrementing the "Quantity" field in the intersection entity. This situation is, in most cases, very undesirable.

## **OBJECT OF THE INVENTION**

It is an object of this invention to provide a system and method for managing the creation and dissemination of digital goods which will at least partially alleviate the difficulties mentioned above.

## **SUMMARY OF THE INVENTION**

In accordance with this invention there is provided a digital goods management system, comprising a digital content creation engine and a digital database for tracking owners of digital goods, the system being characterized in that the digital content creation engine is configured to create a limited quantity of a digital item; to apply a unique digital signature to each digital item so created, the signature including at least an item identifier uniquely associated with the digital item and an owner identifier uniquely

associated with a current owner of that digital item; to insert an entry containing at least the item identifier and associated owner identifier of each created item in the database; and to ensure that only one entry can exist in the database for every created digital item at any given time.

5

A further feature of the invention provides for each entry in the database to include the complete digital signature associated with each created item and the owner identifier of the current owner of that digital item.

- 10 Further features of the invention provide for the item identifier to be generated from information relating to the creation of the item; for the item identifier to include one or more of a set identifier indicating the general idea of a release of items, a range identifier indicating the general size of the release, a release identifier which is a unique identifier that is incremented for
- 15 each given set, a type identifier that identifies the relevant object and an item creation or release date; for the owner identifier to be associated with a user account of the current owner of the digital item, alternatively for the owner identifier to be the user account of the current owner of the item; for the owner identifier to be set to an account of the content creation engine upon
- 20 first creation of the digital item; for the digital signature to include a hash of the digital item; and for the hash to be created by a hash function selected from MD5 or SHA1 hash functions.

- Still further features of the invention provide for the system to include a
- 25 database server configured to manage the database, the database server being configured to receive a request for the transfer of a digital item from a transferring user to a receiving user, to collect a unique identifier of the transferring user, a unique identifier of the receiving user and a unique transferring item identifier of the digital item to be transferred, to look up the
- 30 transferring item identifier in the database and retrieve an associated owner identifier marked for the time being as the current owner of the digital item, to compare the retrieved owner identifier to the transferring user identifier, to



retrieve and validate the digital signature of the digital item being transferred if the owner identifier and transferring user identifiers correspond, and upon successful validation of the signature to update the digital signature of the digital item by substituting the owner identifier with the receiving user identifier and updating the transferring item and database accordingly.

A yet further feature of the invention provide for the request received by the database server to represent a trade of the digital item, a purchase of the digital item, a release of a digital item to a third party, an auctioning off of a digital item, a return of a digital item to the system, or an otherwise transfer of the digital item from the transferring user to the receiving user.

Further features of the invention provide for the system to include a web server defining an application programming interface by means of which requests may be sent to the database server; for the web server and the database server to be integrated; for the web server to define an application programming interface (API) by means of which it may receive instructions and/or requests from third party applications; for the system to include one or both of a web interface and a mobile communication device interface configured to transact with the web server by means of the API, and by means of which users may transact with the system over the Internet from any Internet enabled device such as, for example, a personal computer or mobile phone.

A still further feature of the invention provides for the digital item to be selected from the group comprising digital game cards, digital business cards, digital vouchers, digital audio files, digital video files, digital images, digital image renderings, 3D models, 2D barcodes, 3D barcodes, QD codes, flat files, software programs and the like.

The invention further provides a method of creating and managing online digital goods including the steps of

creating a limited quantity of a digital item with a digital content creation machine;

applying a unique digital signature to each digital item so created, the signature including at least an item identifier uniquely associated with the digital item and an owner identifier uniquely associated with a current owner of the digital item;

inserting an entry containing at least the item identifier and the owner identifier of the item in a database of created digital items;

and ensuring that only one entry exists in the database for every created digital item at any given time.

A further feature of the invention provides for the step of inserting an entry in the database to include inserting the complete digital signature of each created item and the owner identifier of the current owner of that digital item.

Further features of the invention provide for the method to include the steps of generating the item identifier from information relating to the creation of the item; generating the item identifier using one or more of a set identifier, a range identifier, a release identifier, a type identifier and an item creation or release date; associating the owner identifier with a user account of the current owner of the digital item, alternatively, using the user account of the current owner of the digital item as the owner identifier; setting the owner identifier to an account of the content creation engine upon first creation of the digital item; including a hash of the digital item in the signature; and creating the hash with a hash function selected from MD5 and SHA1 hash functions.

Still further features of the invention provide for the method to include the steps of receiving a request for the transfer of a digital item from an old owner to a new owner at a database server configured to manage the database; collecting a unique identifier of the old owner, a unique identifier of the new owner and the item identifier of the digital item to be transferred;

looking up the item identifier of the item to be transferred in the database and retrieving an associated current owner identifier of the digital item from the database; comparing the current owner identifier to the old owner identifier; retrieving and validating the digital signature of the digital item to be  
 5 transferred if the current owner and old owner identifiers correspond; upon successful validation of the signature, updating the digital signature of the digital item to be transferred by substituting the old owner identifier contained in the signature with the new owner identifier and applying it to the digital item to be transferred, the digital item being regarded as having been  
 10 transferred from the old owner to the new owner upon doing so; and updating the database so as to include an entry for the transferred digital item and the associated new owner.

The invention still further provides a method of preventing unauthorized  
 15 copying of a digital item comprising the steps of

- creating only a limited quantity of a the digital item with a digital content creation machine;
- applying a unique digital signature to each digital item so created, the signature including at least an item identifier uniquely associated with the  
 20 digital item and an owner identifier uniquely associated with a current owner of the digital item;
- inserting an entry containing at least the item identifier and the owner identifier of the item in a database of created digital items;
- allowing the digital item to be transferred to a new owner by the  
 25 current owner alone while ensuring that only one entry exists in the database for every created digital item at any given time.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

30

The invention will now be described by way of example only and with reference to the accompanying drawings. In the drawings:-

Figure 1 is a schematic diagram showing the layout of an existing database layout;

5 Figure 2 is a schematic diagram of a digital goods management system in accordance with the invention;

Figure 3 is a schematic layout of a digital signature applied to a digital media item; and

10

Figure 4 is a flow diagram of the steps followed when a user transacts with the system of Figure 2.

#### **DETAILED DESCRIPTION WITH REFERENCE TO THE DRAWINGS**

15

A digital goods management system (1) is shown in Figure 2. In the embodiment of the invention described it will be assumed that the digital goods being managed are digital or “virtual” cards of, for example, famous sports stars. Where reference is therefore made to “cards”, it should be understood that such references could similarly refer to any other digital media item.

20

The system (1) shown in Figure 2 includes a content creation engine (3), a cards database (5), a web server (7), a user web interface (9) and a user mobile phone interface (11). The content creation engine (3) is configured to create a limited number of cards (not shown). Upon creating each card, the card is signed with a unique digital signature (13), an example layout of which is shown in more detail in Figure 3.

25

30 The digital signature includes a collection of information available during the creation of the card. This information may include a variety of digital identifiers such as, for example, a unique identifier (15) of its current owner,

an identifier (17) relating to the set of cards it belongs to, an identifier (19) relating to the range of cards it belongs to, an identifier (21) that is unique to the specific card and an identifier (23) relating to the release or “version” of cards to which the card belongs. The signature may also include a release  
 5 date (25) on which the card was first created or released to the public.

In addition, the signature (13) may include a digital hash (27) of the card itself. The hash may be created by any one of a number of known hash functions which include, amongst others, MD5, SHA1 and SHA2 hash  
 10 functions.

The digital signature may, for example, consist of 380 bits (47 bytes) and have a bit layout as follows:

15 Bits 1-16 OwnerID

Minimum Value 1 (1), Maximum Value FFFF (65535)

0000 0000 0000 0001 – 1111 1111 1111 1111

Bits 17-32 SetID

Minimum Value 1 (1), Maximum Value FFFF (65535)

20 0000 0000 0000 0001 – 1111 1111 1111 1111

Bits 33-48 RangeID

Minimum Value 1 (1), Maximum Value FFFF (65535)

0000 0000 0000 0001 – 1111 1111 1111 1111

Bits 49-64 CardID

25 Minimum Value 1 (1), Maximum Value FFFF (65535)

0000 0000 0000 0001 – 1111 1111 1111 1111

Bits 65-96 ReleaseID

Minimum Value 1 (1), Maximum Value FFFFFFFF (4294967295)

0000 0000 0000 0000 0000 0000 0000 0001 – 1111 1111 1111 1111

30 1111 1111 1111 1111

Bits 97-124 ReleaseDate

Minimum Value 1 (1), Maximum Value 5F5E0FF (99999999)

0000 0000 0000 0000 0000 0000 0001 - 0101 1111 0101 1110 0000  
1111 1111

Bits 125-380 MD5 card contents Char(32)

5

The signature (13) uniquely identifies each card created within the system. In reality, the card itself is represented as a digital object within the system by its unique signature. In addition, system constraints are implemented to ensure that only one such unique key can exist for any one card.

10

It is an important aspect of the invention that each card is assigned to an owner upon its creation. No card may at any time be without an owner. At the time of creation, the ownership of the card is assigned to the system itself, which has a unique account identifier of its own. Only one owner can ever be in control of a unique signature at any given time.

15

After the card has been signed with its digital signature (13), an entry is made in the card database of the card's unique digital signature (13) as well as the unique identifier (15) of the current owner of the card. As before, system constraints are implemented at database level as well to ensure that only one unique signature can exist for each card and also that each unique signature can only have one associated owner.

20

In order to interact with the system (1) and be able to buy or otherwise transact with the digital cards, a user first has to sign up with the service and apply for an account. An account may, for example, be a facebook account, a twitter account, an OpenID account or a custom created account with any number of service providers. Upon signing up with the system and after having created a user account, each user is assigned a unique user identifier which is stored in the database. The user may then start transacting with the system. In the embodiment described, the unique user identifier corresponds to the user's account details.

25

30

The steps followed when a user transacts with the system are shown in Figure 4. A user initiates a transaction with the system from a web interface (9) or mobile phone interface (11) as described above. The user may transact with the system in a number of ways. The user may, for example, initiate a trade of a card (31), purchase a card (37), releases a card to a third party (not shown), auction a card (35), respond to a request from an online vendor to transfer a card (33) or in any other way initiate a transfer of a card it already owns.

10

Upon receiving a request for the transfer of a card, the initiating system, for example an external system (39) which connects to the web server (7) by means of the web server's application programming interface (API), collects the user's unique identifier (the user initiating the transfer may be referred to as the old owner of the card), the unique identifier of the user to whom the card is to be transferred (referred to as the new owner), as well as the unique identifier of the card to be transferred. Once all of this data has been collected it is uploaded to the web server at step (41).

15

20 The system (1) then checks if the current owner of the card identified by the unique card identifier matches the unique identifier of the old owner of the card in the database at step (43). This is done by looking up the unique card identifier (or card signature) in the database (5) and extracting the card's current owner information from the entry for the card. The system also confirms the identity of the new user. If no new user is provided, the system may replace the old owner's identifier in the database entry for the specific card with that of the server's own.

25

If the old owner is identified as the valid owner of the unique signature of the card to be transferred, the process continues. If not, the user is informed via the same interface it initiated the request from at stage (45).

30

After successful validation that the old owner is also the current owner of the card, the digital card signature is extracted from the card to be transferred at step (47) and compared against the data captured in the database (5) at step (49) to ensure it is a unique item that is currently registered within the system. If the signature is found to be valid the process continues at step (51), if the extracted signature is found to be invalid the user is informed via the same interface they initiated the request from at step (53). After successful confirmation of the identity of the card, the card's signature is updated to reflect the new owner's identifier as its singular owner, and the database is updated accordingly at step (55). Finally, the old owner is informed that the card has been successfully transferred to the new owner at step (57).

It should be appreciated that the system of the invention creates each digital item as a fully unique item as only limited quantities of each item exist. This is a feature that existing DRM systems do not share. Due to the limited numbers of the items present in the system, uniqueness of the objects can be enforced. By enforcing uniqueness, stronger replication rules can in turn be enforced as no two items can coexist within the system with the same unique identifier.

Representing digital items in finite amounts makes it possible to add integral checking mechanism that can ensure that the only one copy of an object can exist within the bounds of the system at any given time.

25

The proposed system links unique digital content to user accounts. Once an account has been created media is digitally locked with a combination of the account details and the unique details of the virtual item. It should, however, be appreciated that the digital content is locked in a hardware independent way, which means that the user will have access to his or her digital content irrespective of where it is accessed from.

30



The invention avoids the issues currently created where one virtual (digital) item can belong to many different users at any given time, and avoids the process of duplication while ensuring DRM protection based on a user's account.

5

It will also be appreciated that since the system is operable through a web interface, it is capable of utilizing any form of digital communication that is represented in bits, for example, by means of cellular networks, mobile communication platforms, Internet and web forms. The user or third party API's are invoked to communicate via the applicable protocol and deliver the message to the web server. The web server will update the DB server from here and ensure that the system remains in sync.

The above description is by way of example only and numerous modifications and changes may be made to the embodiments described without departing from the scope of the invention. In particular, the system layout and components may be changed in any number of ways and the signature and its bit layout may differ substantially between applications. Any incremental or defined amount can be used as a signature as long as the chances of a uniqueness conflict occurring are less than the probability of an MD5 and SHA1 hash collision.

25

Dated this 28<sup>th</sup> day of September 2010

ÉRIK VAN DER VYVER

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VON SEIDELS Intellectual Property Attorneys

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for the applicant

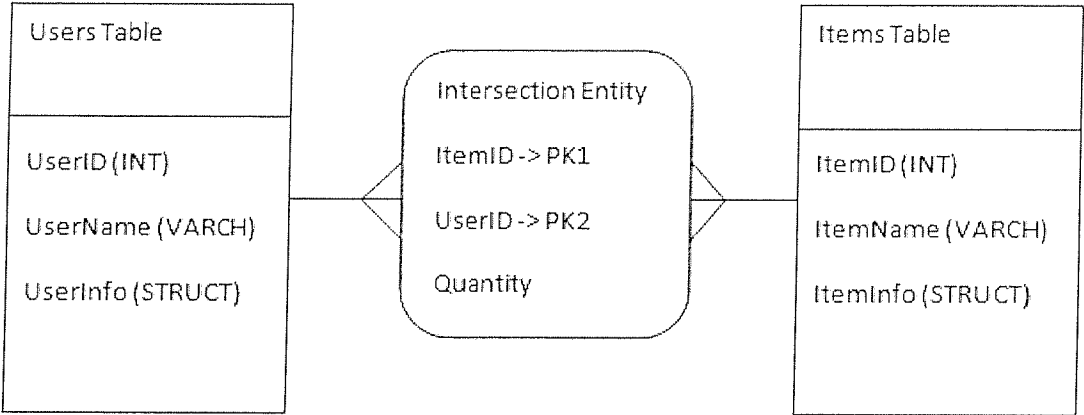


Figure 1

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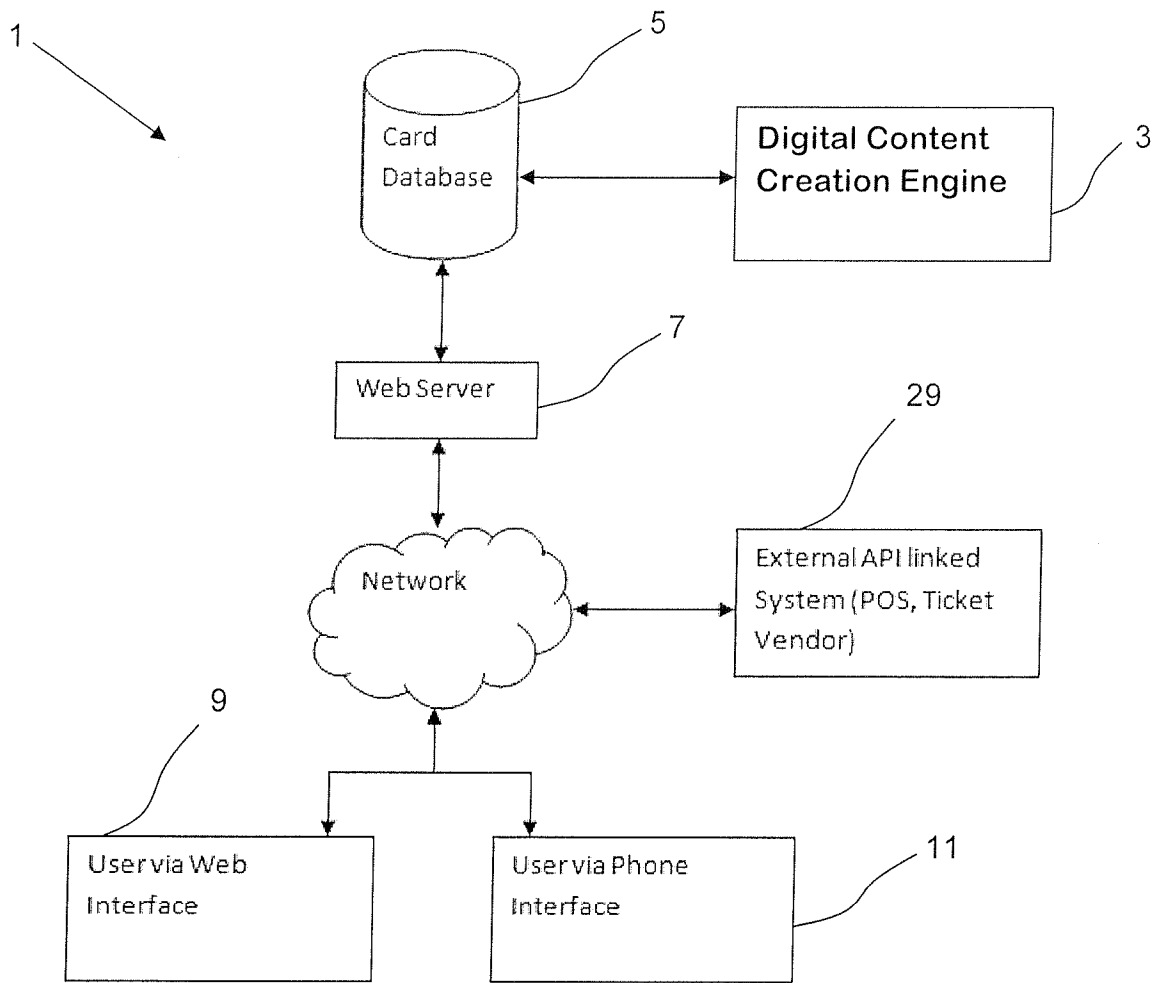


Figure 2

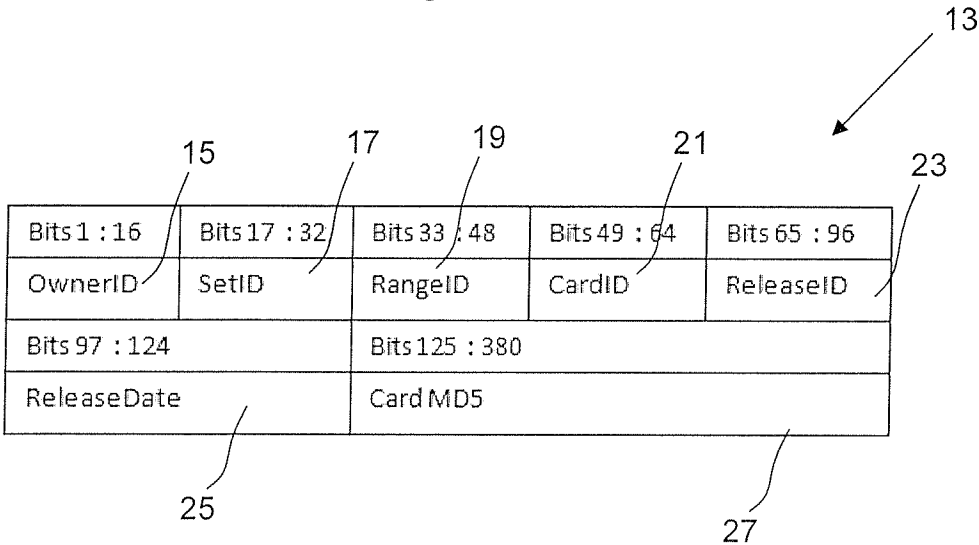


Figure 3

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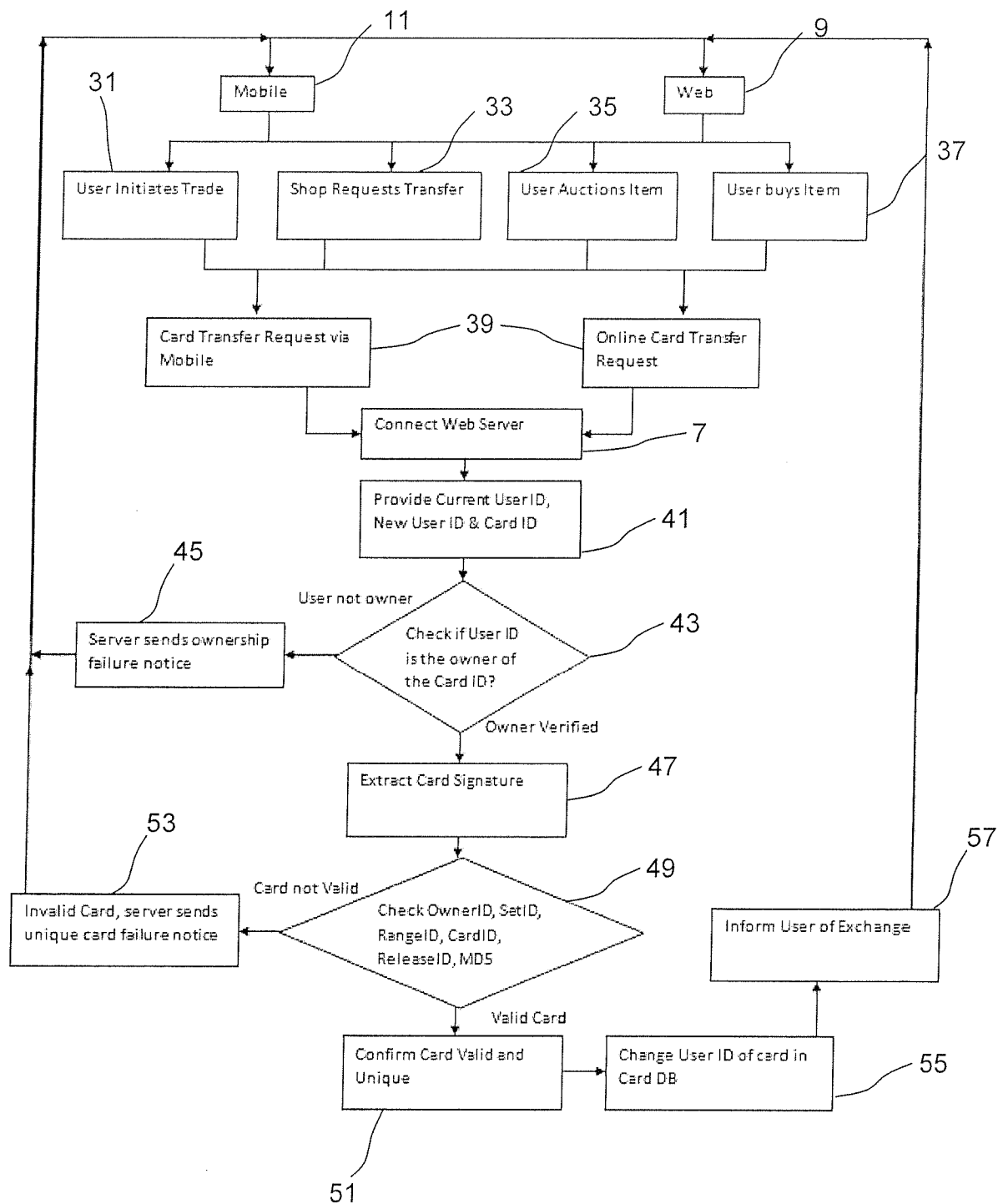


Figure 4

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