



- (51) International Patent Classification:
G06Q 20/34 (2012.01)
- (21) International Application Number:
PCT/FI2012/051151
- (22) International Filing Date:
21 November 2012 (21.11.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
20116166 23 November 2011 (23.11.2011) FI
- (71) Applicant: MAINOSTOIMISTO LUXUS OY [FI/FI];
Bulevardi 44, FI-00120 Helsinki (FI).
- (72) Inventor: TORSTILA, Mikko; Tuokkостie 9 B, FI-02710
Espoo (FI).
- (74) Agent: BORENIUS & CO OY AB; Itämerenkatu 5, FI-
00180 Helsinki (FI).
- (81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,

BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report (Art. 21(3))

[Continued on next page]

(54) Title: A PAYMENT SYSTEM AND METHOD USING A MOBILE COMMUNICATION TERMINAL

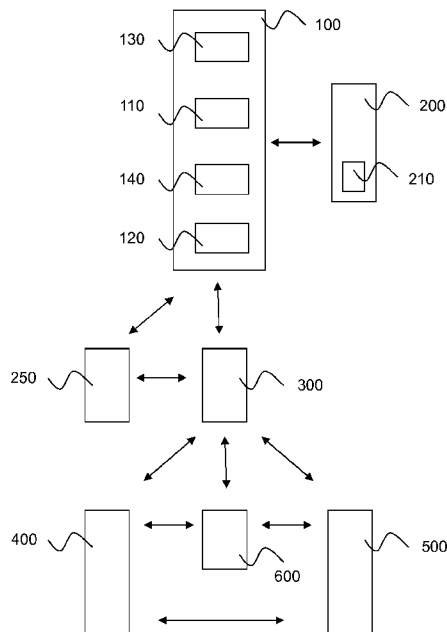


FIG. 1

(57) Abstract: The system comprises a mobile communication terminal (100) with a NFC module (110), a credit and/or debit card (200) with a NFC chip (210), a payment gateway server (300), and at least one financial server (400, 500, 600). The mobile communication terminal (100) is configured to act as a merchant terminal by activating a payment program module (120). The credit and/or debit card number of the purchaser is read from the NFC chip (210) into the NFC module (110), credit or debit is selected manually or automatically, the amount of the payment and the security code of the purchaser are inserted into the payment program module (120). The credit and/or debit card number, the amount of the payment as well as the credit and/or debit card number or account number of the merchant are sent from the mobile communication terminal (100) to the payment gateway server (300) for acceptance. The financial transaction is after acceptance executed from the purchaser to the merchant through the payment gateway server (300) or directly between the financial servers (400, 600) of the relevant financial institutions.

WO 2013/076368 A1

- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

A payment system and method using a mobile communication terminal

TECHNICAL FIELD

5

The invention relates to a system according to the preamble of claim 1.

The invention also relates to a method according to the preamble of claim 4.

10

BACKGROUND ART

Payment with credit and/or debit cards instead of cash is rather normal today. Such a system comprises a credit and/or debit card issued to a user by a first financial institution e.g. a bank, a merchant terminal at a store, a point-on-sale (POS) system within the store, a payment gateway server, a first financial server of the first financial company, and a second financial server of a second financial company. The merchant terminal is connected to the POS system within the store and the POS system is connected to the gateway server. The gateway server provides a connection between the POS system and the first and the second servers of the first and the second financial companies. The purchaser pays his purchase in a store by putting his credit and/or debit card into the merchant terminal, selects credit or debit from the merchant terminal if the card is a combined credit and debit card and then types his security code into the merchant terminal. The gateway server verifies the financial transaction from the first financial server, which is the financial server of the credit institution of the purchaser if the option credit has been selected and the financial server of the bank of the purchaser if the option debit has been selected. The financial transaction between the account of the purchaser and the account of the merchant is executed after acceptance has been received. The payment gateway server sends

15

20

25

30

confirmation of the financial transaction to the merchant terminal, which prints a receipt of the transaction to both parties.

5 EP patent publication 2372628 discloses a method, apparatus, and system for payment of commercial dealings, service approval and subscription, capable of performing approval for various kinds of services such as a membership subscription, or the like, through mobile communication terminals, member store terminals, and a payment gateway which store financial information of users. The system can comprise a mobile communication terminal, a merchant terminal, a
10 point-on-sale (POS) system, a payment gateway (PG) and a financial server of a card company. The merchant terminal can be connected to the POS system within the store. The connections between the POS system and the PG, between the mobile communication terminal and the PG, and between the PG and the Financial server of the card company is arranged e.g. through the Internet.

15 When a product purchaser desires to purchase a product, a seller enters purchase information, such as the price of the product or the like, using the key input unit of the merchant terminal, and then transfers merchant information and the purchase information to the mobile communication terminal of the purchaser via the
20 communication unit of the merchant terminal. A subsequent payment approval request procedure is performed by the mobile communication terminal of the purchaser. The merchant terminal and the mobile communication terminal can be connected by Near Field Communication (NFC) technology. After receiving the merchant information and the purchase information from the merchant terminal,
25 the mobile communication terminal transmits the financial information stored therein or entered by the user (a credit card number or a virtual account number), together with the received merchant information and purchase information, to the PG, and requests the PG to approve the payment.

30 The PG sends the payment information or a payment approval request message, including the payment information, to the financial server of the relevant card

company. The financial server of the card company determines whether the user of the mobile communication terminal and the merchant are members of the relevant card company and whether the current transaction is a transaction conducted within the credit limit of the user, and then determines whether to approve the payment. The financial server sends the approval number or payment results to the mobile communication terminal either via the PG or directly, this allowing the purchaser to check the approval. After the payment approval has been determined by the financial server of the card company, the card company transfers the amount either via the PG or directly.

10

Prior art solutions require a rather complicated system comprising a separate merchant terminal in the store. The merchant terminal is further often connected to a point-on-sale (POS) system in the store and the POS system is further connected via the Internet to a payment gateway serve.

15

Prior art solutions are not suitable for merchants selling e.g. on a market or for a simple money transfer between two people.

Prior art solutions are also not suitable for use in developing countries where the cable based telecommunication infrastructure is not that extensive.

20

SUMMARY OF THE INVENTION

The object of the invention is to eliminate the disadvantages of prior art solutions and to provide a novel solution for payments with mobile communication terminals.

25

The system according to the invention is characterized by the features in characterizing portion of claim 1.

30

The method according to the invention is characterized by the features in the characterizing portion of claim 4.

5 The invention makes it possible to execute money transfer simply and cheaply with a mobile communication terminal i.e. a mobile phone. There is no need for a separate merchant terminal and the other infrastructure such as a point-of-sale system related to that. A mobile communication terminal comprising an NFC module forms the merchant terminal in the invention. A suitable mobile communication terminal is a so called smart phone provided with an NFC module and access to the Internet. NFC modules are very soon becoming standard
10 equipment in smart phones just like blue-tooth modules are already today. A payment program module is then downloaded from a service provider into the memory of the smart phone or the payment program module is used from a cloud based program provider. The smart phone holder can then insert his credit and/or
15 debit card number or his account number into the payment program module, said credit and/or debit card number or account number being connected to the bank account of the merchant in the financial institution used by the merchant. Said credit and/or debit card number or account number of the merchant is then stored in the NFC module of the smart phone. A contract with a payment gateway
20 provider is further needed in order to be able to use the smart phone as a merchant terminal. Such a contract will probably in the future be executed between the mobile phone network operators and the payment gateway provider.

25 The smart phone communicates through the mobile network with data connection capabilities and the mobile network with data connection capabilities is at some point connected to the Internet. The server of the payment gateway provider is also connected to the Internet and can thus be accessed by the smart phone. When the payment program module is activated in the smart phone either manually or by bringing the credit and/or debit card of the purchaser into close proximity with the
30 NFC module of the mobile communication terminal, the payment program module in the smart phone automatically opens a connection via the Internet to a

web site on the server of the payment gateway provider. The identification of the merchant in the gateway server can be done based on the credit and/or debit card number of the merchant or the account number of the merchant after which the payment program module in the smart phone can initiate the financial transfer
5 from the purchaser to the merchant.

The invention can be used by merchants selling e.g. on a market or for a simple money transfer between two people.

10 The invention can also be used in developing countries as long as there is availability to a mobile network with data connection capabilities that is connected to the Internet.

15 BRIEF DESCRIPTION OF THE DRAWINGS

Some specific embodiments of the invention are described in the following in detail with reference to the accompanying figures, in which:

20 Figure 1 shows an example of a system according to the invention.

DETAILED DESCRIPTION OF SPECIFIC EMBODIMENTS

25 Figure 1 shows an example of a system according to the invention. The system comprises a mobile communication terminal 100, a credit and/or debit card 200 comprising a NFC chip 210, a payment gateway server 300, a cloud based program provider 250, a first financial server 400 of a first financial institution and a second financial server 500 of a second financial institution. The credit
30 and/or debit card 200 holder i.e. the purchaser has an account in the first financial institution and the mobile communication terminal 100 holder i.e. the merchant

has an account in the second financial institution. The system may further comprise a third financial server 600 of a third financial institution. The first 400 and the second 500 financial institutions are banks and the third 600 financial institution is a credit company.

5

The mobile communication terminal 100 comprises a Near Field Communication (NFC) module 110, a keyboard 120, a display 130 and a memory 140. A payment program module is stored in the memory 130 of the mobile communication terminal 100 for configuring the mobile communication terminal 100 to act as a merchant terminal. Another possibility is to use the payment program module from a cloud based program provider 250. The mobile communication terminal 100 is advantageously a so called smart phone and the keyboard 120 can be a touch keyboard within the display 130 of the smart phone. The NFC module 110 in the mobile communication terminal 100 can read the information that has been stored into the NFC chip 210 in the credit and/or debit card 200 within a distance of less than a few centimeters. This makes the transfer of information between the credit and/or debit card 200 and the mobile communication terminal 100 very safe.

20 Payments from the purchaser to the merchant using a credit and/or debit card and the mobile communication terminal configured to act as a merchant terminal are executed in the following way.

The purchaser brings his credit and/or debit card 200 into close proximity with the NFC module 110 in the mobile communication terminal 100 in order for the NFC module 110 to be able to read the credit and/or debit card number from the NFC chip 210.

The merchant types the amount of the payment with the keyboard 120 of the mobile communication terminal 100 into the relevant field in the user interface of the payment program module in the mobile communication terminal 100.

30

When the card 200 of the purchaser is a so called combined credit and debit card, the purchaser must select between the option credit and debit in the user interface of the payment program module in the mobile communication terminal 100. When the card 200 of the purchaser is either a credit card or a debit card, the payment program module will automatically choose the right option based on the type of the card. Optionally, the purchaser then types a security code of his credit and/or debit card 200 with the keyboard 120 of the mobile communication terminal 100 into the relevant field in the user interface of the payment program module in the mobile communication terminal 100.

10

The mobile communication terminal 100 sends the credit and/or debit card 200 number of the purchaser, optionally said security code of the purchaser, and the amount of the payment as well as the credit and/or debit card number of the merchant or the account number of the merchant to the payment gateway server 300. If the purchaser has selected debit in the user interface of the payment program module, then the payment gateway server 300 directs the payment acceptance enquiry to the first financial server 400, i.e. to the bank that had issued the debit card of the purchaser. If the purchaser has selected credit in the user interface of the payment program module, then the payment gateway server 300 directs the payment acceptance enquiry to the third financial server 600, i.e. to the credit company that has issued the credit card of the purchaser.

20

The financial transaction is then executed either from the first financial server 400 or from the third financial server 600 to the second financial server 500. The financial transaction can be executed either directly between the relevant financial servers 400, 500, 600 or via the payment gateway server 300.

25

The payments gateway server 300 can determine the correct financial institution to which the request of acceptance has to be sent to based on the credit and/or debit card number and the alternative credit or debit that the purchaser has selected in the user interface of the payment program module. The financial

30

institute which then receives the request for acceptance can based on the credit and/or debit card number, the optional security code, and the amount of the payment indentify the purchaser and check that there are either enough funds in the account of the purchaser or that the credit limit is not exceeded by the
5 financial transaction.

The merchant will have a corresponding credit and/or debit card number, which he inserts into the payment program module in the mobile communication terminal 100. The merchant could as an alternative insert his account number into
10 the payment module in the mobile communication terminal 100. The credit and/or debit card number or the account number indentifies the merchant and his financial institution. The first financial server 400 or the third financial server 600 or the payments gateway server 300 can based on the credit and/or debit card number of the merchant or the account number of the merchant indentify the
15 second financial institute 500 i.e. the financial institute of the merchant.

It is clear that the purchaser and the merchant can be customers of the same financial institute in which case the financial transfer takes place within said financial institute.
20

The payment gateway 300 can be in contact with all relevant financial institutions in order to make financial transfers between all these relevant financial institutions possible.

25 The system can further include a possibility to transmit receipts to the purchaser and the merchant of the financial transfer. The purchaser can insert his e-mail address into the user interface of the payment program module e.g. at the same time when he inserts his security code. The merchant can on the other hand insert his e-mail address into the interface of the payment program module at the same
30 time when he inserts his credit and/or debit card number into the payment program module i.e. when he downloads the payment program module into the

mobile communication terminal and makes the necessary configurations to the program module.

5 The payment gateway server 300 will send the confirmation of the financial transaction i.e. the receipt of the transaction to the mobile communication terminal 100 when the financial transaction has been executed. The payment program module 120 in the mobile communication terminal 100 can then send the receipt to the e-mail address of the purchaser and to the e-mail address of the merchant.

10 The examples of the embodiments of the present invention presented above are not intended to limit the scope of the invention only to these embodiments. Several modifications can be made to the invention within the scope of the claims.

CLAIMS

1. A payment system using a mobile communication terminal comprising:
- a mobile communication terminal (100) comprising a Near Field Communication (NFC) module (110),
 - a credit and/or debit card (200) comprising a NFC chip (210),
 - a payment gateway server (300),
 - at least one financial server (400, 500, 600) of a financial institution,
- the mobile communication terminal (100) further comprising:
- a payment program module (120), which is either operated from a cloud based service provider (250) or which has been stored in a memory (140) of the mobile communication terminal (100) for configuring the mobile communication terminal (100) to act as a merchant terminal and into which payment program module (120) a credit and/or debit card number of the merchant or an account number of the merchant has been inserted, wherein payments to the merchant are executed by the steps of:
 - bringing the NFC chip (210) of the credit and/or debit card (200) of the purchaser into close proximity with the NFC module (110) in the mobile communication terminal (100) of the merchant in order for the NFC module (110) to read the credit and/or debit card number of the purchaser from the NFC chip (210),
 - selecting the option credit or debit from the user interface of the payment program module (120) in the mobile communication terminal (100) if the card of the purchaser is a combined credit and debit card, whereas the payment program module (120) will otherwise automatically select the proper option credit or debit based on the type of the card of the purchaser,
 - typing the amount of the payment into a relevant field in the user interface of the payment program module in the mobile communication terminal (100),
- characterized by** the further steps of
- sending the credit and/or debit card number of the purchaser, the amount of the payment as well as the credit and/or debit card number of the merchant or the

account number of the merchant from the mobile communication terminal (100) to the payment gateway server (300), wherein the payment gateway server (300) directs a request for acceptance of the financial transfer to a financial server (400, 600) of the relevant financial institution of the purchaser in order get acceptance
5 for the financial transaction from the purchaser to the merchant.

2. A payment system according to claim 1, wherein payments to the merchant are executed by the further step of typing a security code of the credit and/or debit card (100) of the purchaser into a relevant field in the user interface of the
10 payment program module in the mobile communication terminal (100), **characterized by** the further step of sending the security code of the purchaser from the mobile communication terminal (100) to the payment gateway server (300) together with the credit and/or debit card number of the purchaser and the amount of the payment as well as the credit and/or debit card number of the
15 merchant or the account number of the merchant.

3. A payment system according to claim 1 or 2, **characterized** in that the user interface of the payment program module (120) further comprises a field into which the e-mail address of the purchaser can be inserted whereas the e-mail
20 address of the merchant is preprogrammed into the payment program module (120), making it possible to send a receipt of the financial transaction from the mobile communication terminal (100) to the e-mail address of the purchaser and to the e-mail address of the merchant after confirmation of the financial transaction has been received by the mobile communication terminal (100) from
25 the payment gateway server (300).

4. A payment method using a mobile communication terminal comprises the steps of:

- providing a mobile communication terminal (100) comprising a Near Field
30 Communication (NFC) module (110),
- providing a credit or debit card (200) comprising a NFC chip (210),

- providing a payment gateway server (300),
 - providing at least one financial server (400, 500, 600) of a financial institution,
 - configuring the mobile communication terminal (100) to act as a merchant terminal by operating a payment program module (120) from a cloud based program provider (250) or by installing said payment program module (120) into the memory (140) of the mobile communication terminal (100) and by inserting a credit and/or debit card number of the merchant or an account number of the merchant into the payment program module (120),
 - bringing the NFC chip (210) of the credit and/or debit card (200) of the purchaser into close proximity with the NFC module (110) of the mobile communication terminal (100) of the merchant in order for the NFC module (110) to be able to read the credit and/or debit card number of the purchaser from the NFC chip (210),
 - selecting the option credit or debit from the user interface of the payment program module in the mobile communication terminal (100) if the card of the purchaser is a combined credit and debit card, whereas the payment program module (120) will otherwise automatically select the proper option credit or debit based on the type of the card of the purchaser,
 - typing the amount of the payment with the keyboard (140) of the mobile communication terminal (100) into a relevant field in the user interface of the payment program module in the mobile communication terminal (100),
- characterized** by the further steps of:
- sending the credit and/or debit card number of the purchaser, the amount of the payment as well as the credit and/or debit card number of the merchant or the account number of the merchant from the mobile communication terminal (100) to the payment gateway server (300), wherein the payment gateway server (300) directs a request for acceptance of the financial transfer to a financial server (400, 600) of the relevant financial institution of the purchaser in order get acceptance for the financial transaction from the purchaser to the merchant.

5. A payment method according to claim 4, wherein payments to the merchant are executed by the further step of typing a security code of the credit and/or debit card (100) of the purchaser into a relevant field in the user interface of the payment program module in the mobile communication terminal (100),
5 **characterized by** the further step of sending the security code of the purchaser from the mobile communication terminal (100) to the payment gateway server (300) together with the credit and/or debit card number of the purchaser and the amount of the payment as well as the credit and/or debit card number of the merchant or the account number of the merchant.

10

6. A payment method according to claim 4 or 5, **characterized** by the further step of:
- inserting the e-mail address of the purchaser into a relevant field in the user interface of the payment program module (120) whereas the e-mail address of the
15 merchant has been preprogrammed into the payment program module (120), making it possible to send a receipt of the financial transaction from the mobile communication terminal (100) to the e-mail address of the purchaser and to the e-mail address of the merchant after confirmation of the financial transaction has been received by the mobile communication terminal (100) from the payment
20 gateway server (300).

1/1

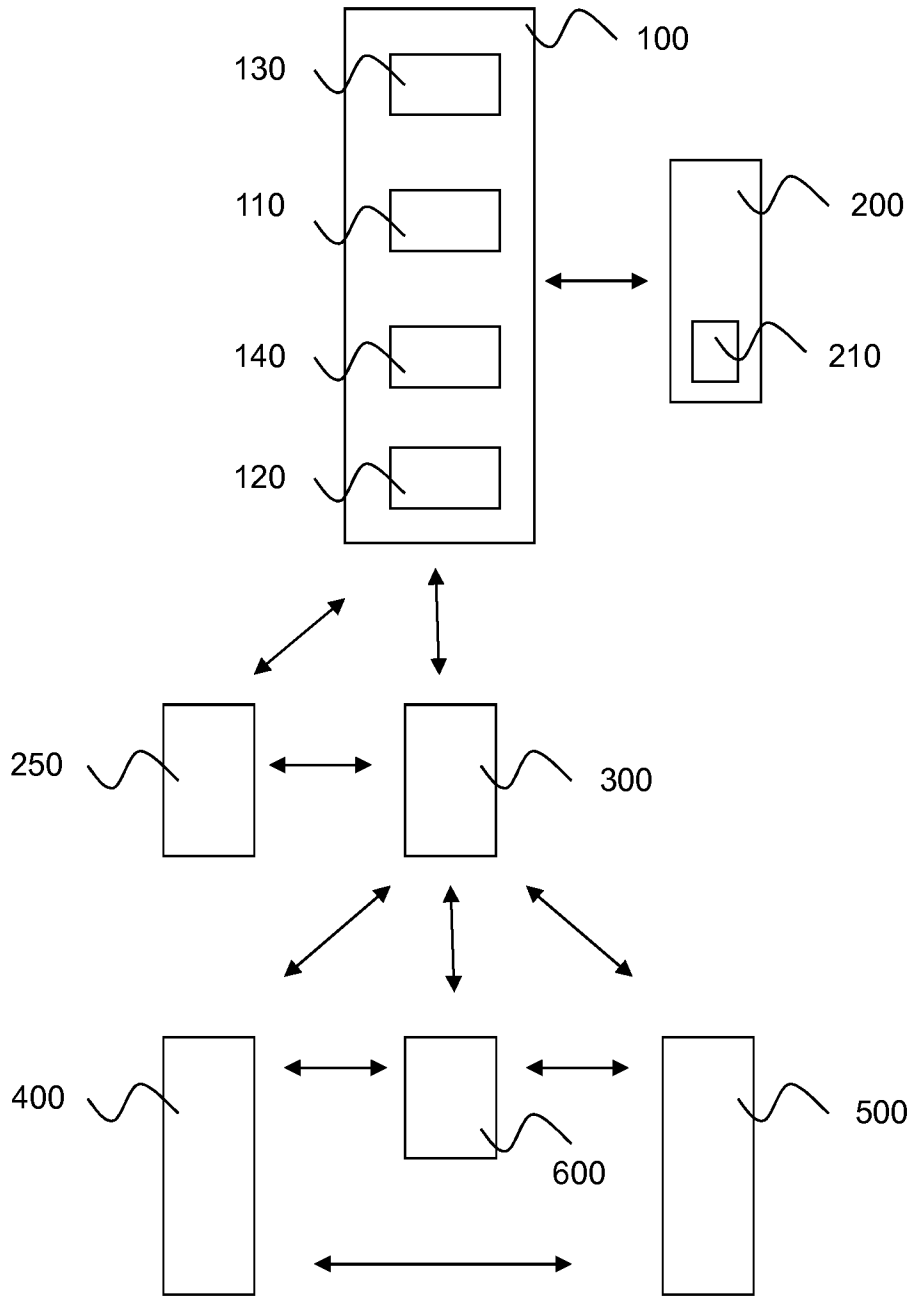


FIG. 1

INTERNATIONAL SEARCH REPORT

International application No PCT/FI2012/051151

A. CLASSIFICATION OF SUBJECT MATTER
 INV. G06Q20/34
 ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 G06Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2009/166420 A1 (PHILLIPS SIMON [GB]) 2 July 2009 (2009-07-02) the whole document	1-6
A	----- US 2010/131413 A1 (KRANZLEY ARTHUR D [US] ET AL) 27 May 2010 (2010-05-27) the whole document -----	1-6

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

20 March 2013

Date of mailing of the international search report

02/04/2013

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040,
 Fax: (+31-70) 340-3016

Authorized officer

Van Dop, Erik

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/FI2012/051151

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009166420	A1	02-07-2009	NONE

US 2010131413	A1	27-05-2010	NONE
