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<p>(21) Internationales Aktenzeichen: PCT/DE96/00870          (22) Internationales Anmeldedatum: 18. Mai 1996 (18.05.96)          (30) Prioritätsdaten:                195 17 818.1        18. Mai 1995 (18.05.95)        DE          (71) Anmelder (für alle Bestimmungsstaaten ausser US): ANGE-          WANDTE DIGITAL ELEKTRONIK GMBH [DE/DE];          Ecksweg 4, D-21521 Dassendorf (DE).          (72) Erfinder; und          (75) Erfinder/Anmelder (nur für US): KREFT, Hans-Dietrich          [DE/DE]; Ecksweg 4, D-21521 Dassendorf (DE).          (74) Anwalt: MIERSWA, Klaus; Friedrichstrasse 171, D-68199          Mannheim (DE).</p>	<p>(81) Bestimmungsstaaten: AL, AM, AU, AZ, BB, BG, BR, BY, CA, CN, CZ, EE, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, RO, RU, SD, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO Patent (KE, LS, MW, SD, SZ, UG), eurasisches Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches Patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI Patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Veröffentlicht</b>  <i>Mit internationalem Recherchenbericht.          Vor Ablauf der für Änderungen der Ansprüche zugelassenen Frist. Veröffentlichung wird wiederholt falls Änderungen eintreffen.</i></p>	
<p>(54) Title: METHOD OF DISPENSING SMART CARDS</p>		
<p>(54) Bezeichnung: VERFAHREN ZUR AUSGABE VON CHIPKARTEN</p>		
<p>(57) Abstract</p> <p>The invention concerns a process for dispensing smart cards to smart card users from a magazine in a storage container. The smart cards are available in a non-predetermined way, without restriction to a particular provider or particular use. The smart cards at a point in time t1 contain those electronic components whose functions are sought before t1 by many undefined and unknown users for smart-card applications. For the purpose of loading a smart card with data and dispensing a smart card to a user, the smart card dispensing station can communicate via a user menu with a user during a period Δt between t1 and a later time t2. The user menu gives unambiguous and repeatable specifications regarding loading and dispensing. During the period Δt, the card dispensing station is connected via a cable- and/or radio-linked active communication adapter to an automatic or human-operated verification system. In the period Δt, the user can enter particular features via the user menu and data link into the dispensing station which transmits those features to the remote station; during the period Δt, the programs and/or data at the dispensing station can be modified by back-transmitted data and/or programs from the remote station. Personalisation, i.e. initial loading of the smart card with programs and/or data which are unique to and identify the card user, is done during the period Δt and the selection (controlled from the dispensing station) of a particular smart card from the magazine at time t2 takes place in such a way that the user operating the menu receives his own non-exchangeable card corresponding to the specifications which he or she entered via the menu and suitable for use as a smart card at some time after t2.</p>		

**(57) Zusammenfassung**

Die Erfindung betrifft ein Verfahren zur Ausgabe von Chipkarten an Chipkartennutzer aus einem Magazin eines Vorratsbehälters. Die Chipkarten sind in nicht bestimmter Weise ohne Zuordnung zu einem bestimmten Chipkartenanbieter und ohne Zuordnung zu einer bestimmten Chipkartennutzung vorrätig, wobei die Chipkarten zum Zeitpunkt t1 diejenigen elektronischen Bauelemente enthalten, deren Funktionen viele unbestimmte und unbekannte Chipkartennutzer vor dem Zeitpunkt t1 zur Erfüllung von Chipkartenanwendungen nachfragen. Die Chipkartenausgabestation kann zum Zwecke des Ladens einer Chipkarte mit Daten und der Ausgabe einer Chipkarte an einen Chipkartennutzer über ein Bedienmenü mit einem Nutzer während der Zeitspanne  $\Delta t$ , die zwischen der Zeit t1 und der späteren Zeit t2 liegt, kommunizieren, wobei das Bedienmenü die Verfahrensweise der Ladung und der Ausgabe einer Chipkarte eindeutig und wiederholbar vorgibt. Während der Zeit  $\Delta t$  ist die Chipkartenausgabestation über einen leitungsgebundenen und/oder funkgebundenen aktiven Datenanschluß mit einem automatischen oder von Menschen geführten Prüfsystem verbunden. In der Zeit  $\Delta t$  kann der Chipkartennutzer über das Bedienmenü per Datenleitung individuelle Merkmale in die Chipkartenausgabestation eingeben, die von ihr zu der entfernten Station übertragen werden, während der Zeit  $\Delta t$  können die Programme und/oder Daten der Chipkartenausgabestation per rücküberstandter Daten und/oder Programme von der entfernten Station verändert werden. Die Personalisierung, d.h. die erstmalige Ladung der Chipkarte mit Programmen und/oder Daten, die dem Nutzer der Karte eindeutig zugeordnet sind und ihn identifizieren, erfolgt während der Zeit  $\Delta t$ , womit die von der Chipkartenausgabestation gesteuerte Auswahl einer bestimmten Chipkarte aus dem Magazin zum Zeitpunkt t2 so erfolgt, daß der das Menü bedienende Nutzer seine individuelle, unverwechselbare Chipkarte erhält, die seinen per Menü eingegebenen Vorgaben entspricht, und die als Chipkarte zu einem Zeitpunkt nach t2 entsprechend genutzt werden kann.

**LEDIGLICH ZUR INFORMATION**

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Process and device for dispensing individual chip cards

Technical area:

The invention relates to a process and to a device for dispensing individual chip cards to a plurality of individual chip card users, employing a chip card dispensing station with at least one storage container.

State of the art:

EP 0,428,233 A1 discloses a process and a device for dispensing chip cards on which information can be electromagnetically stored and is readable; moreover, visual information is present that serves to identify the bearer of the card. The electromagnetically readable information and the visual information are arranged on different layers of the chip card which are arranged in a completely enclosed sheathing. A device for the production of such chip cards comprises a central processing unit, a video camera connected to it as well as a distributor machine that is likewise connected to the processing unit. The distributor machine comprises a printer in order to print a picture that has been taken by the video camera onto a suitable carrier, whereby the picture is converted into electric signals by the processing unit, as well as a magazine in which a large number of electromagnetically programmable carriers are arranged. The distributor machine also comprises an apparatus to apply a transparent sheathing layer around the carrier and the picture carrier layer that contains the picture so as to join the carrier and the picture carrier layer to each other in this manner.

DE 30 4 463 C2 discloses a process and a device for individual coding cards, each of which bears its individually assigned card code, for example, a serial number, in readable form, by means of which and using a person-specific secret code, the PIN, an output offset code is formed according to defined algorithms and this code is recorded on the card in readable form. The PIN code is individually specified by the person and encoded with a person-specific open code, e.g. an account number, according to a defined first algorithm, in order to generate an initial offset code that is encoded with an institution-specific secret code in order to generate an auxiliary offset code. The auxiliary offset code is encoded according to a third algorithm with the information card code read off the card to generate the output offset code.



DE 93 10 231.3 U1 describes an information system for tourism with a display system having a data processing unit with a memory, monitor, numeric keyboard, function keys, picture fields with a plan and overview as well as an arrangement of various system components in an information carrier as well  
5 as a modem and/or interface that establishes a data connection with printout options.

WO 93/04433 describes a standardized modular card dispensing system in which modules are mechanically and electrically connected to each other in  
10 order to form a device for dispensing specific, personalized cards. For this purpose, a controller is connected to a communication bus with an input keyboard and a monitor, making it possible for the controller to acquire and forward personalizing data from various card production modules, in order to produce differently coded, personalized cards in this manner. These are  
15 always chip cards of one and the same chip card provider.

Technical objective:

The invention is based on the objective of allowing the automated dispensing of individual chip cards to an initially unknown card user for a plurality of chip  
20 card providers or service providers according to individual requirements of a card user in a simple and efficient manner.

Disclosure of the invention and of its advantages:

This objective is achieved according to the invention in that a connection is  
25 established via a cable-linked and/or radio-linked active data connection to a remotely located verification or monitoring station of various card providers that is either automatic or human-operated, and the personal data is transmitted to the remote verification or monitoring station of the selected card provider, whereby the programs and/or data of the chip card dispensing station  
30 can be changed by back-transmitted data and/or programs from the selected remote verification or monitoring station and the chip card is loaded with programs and/or data as a function of the programs and/or data coming from the remote verification or monitoring station, so that the card user operating the menu receives his individual chip card for use, issued by the card provider  
35 he has selected from the chip card dispensing station.

Whereas up until now, chip cards have been issued by banks, credit card organizations or companies directly to a known chip card user, the invention



advantageously makes it possible to issue chip cards to an initially unknown card user, whereby, at a chip card dispensing station, the unknown card user can obtain an overview of various card providers, card properties and their advantages. Subsequently, the right card can be selected from among various  
5 providers and, following a procedure of card initialization and card personalization, a card for a specific purpose and/or the card of a specific card provider can be dispensed from a card storage unit.

Three times are distinguished. Before the point in time  $t_1$ , there are cards in  
10 the magazine of a chip card dispensing station for a plurality of card users. During the time period  $D_t$ , which lies between  $t_1$  and the later time  $t_2$ , a specific card is selected and prepared for a specific user, whereby said card can be used at a time after  $t_2$  in conventional card terminals.

15 Chip cards are stored in a magazine as the storage container of the chip card dispensing station at a point in time  $t_1$ . At the point in time  $t_1$ , the chip cards contain those electronic components whose functions are requested before the point in time  $t_1$  by many undefined and unknown card users for implementing chip card applications. This ensures that the chip card dispensing station  
20 contains chip cards of the type normally required on the market.

Loading the chip card with data and dispensing the chip card to card users take place via the user menu. Communication takes place between the menu and the card user in such a way that the user menu presents the sequence of  
25 the process of loading and dispensing the card unambiguously and repeatably for all kinds of card users. The procedures in each menu sequence take place in a repeatable manner. In this way, according to the patent, it is ensured that the only steps taken by different users and by the chip card dispensing station are those steps that are permitted on the menu.

30 During the time  $D_t$ , the chip card dispensing station is connected via a cable-linked and/or radio-linked active data connection to a remotely located verification or monitoring station that is either automatic or human-operated. The card user has to be checked in order for chip cards to be dispensed. In  
35 particular, the identity of a card user has to be verified, since it has to be ruled out that a card user initializes a card with the particulars of another card user. If the sequence of the unambiguously specified specifications of the user menu can be influenced by means of programs in the chip card dispensing station



and if, during the time Dt, the programs and data of the chip card dispensing station can be loaded and/or changed and/or selected via the data connection, then the sequence of the procedures at the chip card dispensing station can be influenced by information from the remote station. In this manner, according to the invention, it is ensured that the output of cards to card users at a chip card dispensing station is controlled by an organization that is responsible for the cards and their properties; personal contact between an employee of an organization that issues chip cards and a card user is replaced by communication via a data connection.

During the time Dt, the card user can enter individual, person-specific data known only to him or person-related particulars into the chip card dispensing station by means of the user menu via the data line. During the time Dt, this data is transmitted from the chip card dispensing station to the remote station and it can be verified there. As a function of this transferred data, the programs and/or data of the chip card dispensing station can be changed by back-transmitted data and/or programs from the remote station. Thus, an individual setting of the menu sequence is possible from the remote station. For example, the sequence can be changed as a function of the age of the card user. In this manner, the loading of the chip card with programs and/or data is also made possible as a function of the programs and/or data arriving from the remote station. Consequently, chip cards can be loaded with the data that the card user requests via the menu or that the remote station would like to load into the cards.

One reason for making use of the chip card dispensing station is the initialization, i.e. the first-time functional activation of a chip card. For example, a specific numerical code has to be entered into the chip card so that it will accept data for the first time. This ensures that chip cards can only be activated by those remote sites that have the code for opening them, i.e. for their functional activation. According to the invention, this is done by means of programs and/or data from the remote station. Another reason is the personalization of the chip card, i.e. the first-time loading of the chip card with programs and/or data, which are uniquely associated with the card user of the chip card and which identify him as an entitled card user of the chip card.

With this process, the selection of a specific chip card from the magazine takes place in that the card user operating the menu receives his individual, distinct



chip card at point in time t2. This chip card corresponds to his information entered via the menu so that, at a point in time after t2, the chip card can be used in the manner he intended. At the same time, a remotely located verification site will be able to check the proper issuing of the card and store data pertaining to the issued card for control purposes.

Advantageously, the chip card dispensing station is equipped with an optical/electronic recording unit for photographing images and/or persons and/or documents. The recorded pictures can be transmitted to the remote station. This ensures that a card user at the chip card dispensing station can also be recognized remotely, for example, by means of a video installation. Personal identification documents or other papers and written information can also be transmitted by the recording unit. The act of signing can also be transmitted. The authentication, i.e. the entitlement of the right person to receive a card, can be ensured in this manner.

The chip card dispensing station is also equipped with a card printing station so that the surface of the card can be printed on in order to create different appearances. For example, pictures of the user taken by video can be applied onto the card surface by means of the card printing station. In this way, the surface of the card can be given a distinct appearance. By the same token, the chip card dispensing station can store the optically/electronically recorded data in the chip card. In this manner, particulars of the person such as, for instance, the picture of the user, can be entered into the memory of a chip card.

For this purpose, the chip card dispensing station is equipped with an alphanumeric keypad for entering numbers and/or letters and/or any other characters. Thus, the entry of a secret number (PIN) into the card is ensured during the card personalization. The card user knows which number has to be entered if specific functions of the chip card are to be accessed. The process is comparable to that used with today's magnetic strip cards.

According to the invention, the chip card dispensing station has a read/write station for chip cards, which functions in the same manner as the conventional chip card terminals found on the market. In this way, it is possible to check the function of a chip card dispensed by the chip card dispensing station via a request to this effect by the user menu in the read/write



station after the point in time  $t_2$ . In case of an error, for example, the card can be invalidated.

5 The chip card inserted into the read/write station can also be checked by the remotely located monitoring system. The further utilization of the chip card can be made contingent upon the back-transmitted data from the remote station.

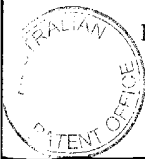
10 The chip card dispensing station can contain a built-in printer that generates a confirmation slip on the transactions made by the chip card user. This makes it possible to print out the data stored in the chip card dispensing station or alternatively, to print out the data of the card and its stored contents. Thus, the card user receives a record of the transactions made and of the card's stored contents.

15 The chip card dispensing station also has a long-term memory and consequently, it can store all of the actions and data utilized for a later review.

20 In addition, the chip card dispensing station has a magnetic strip read/write device. In this way, cards with magnetic strips can also be dispensed by the chip card dispensing station. The procedures can take place in the same way as described above for chip cards. The only difference is that, in addition to the chip in the card, there is also a magnetic strip in the known form. Consequently, chip cards with magnetic strips can also be dispensed at the  
25 chip card dispensing station. Unwritten magnetic strips can also be written by the magnetic strip write device.

30 The chip card dispensing station can have several magazines, separated from each other, in which different cards are present, depending on the technical configuration and on the card issuers; the card user can select a card to suit his requirements. For example, a contact-free card can be selected that can be specially offered by a provider for applications in the sector of public transportation.

35 Via the menu, an account at a bank or other organization can be opened for the card user via the remotely located station. With newly issued chip cards, this is often the objective of the organization offering the cards. The advantage of the process lies in the fact that the card user can examine the various cards and



the services they offer at one or several chip card dispensing stations during the time t without having to get into contact with a specific card provider. The competition among the card providers takes place in the neutral environment of the chip card dispensing station.

5

The cards of the chip card dispensing station can contain specific pre-initializations which are present in the card in the form of data. This entails special advantages for the card user with certain service providers when he uses a certain card. For example, limit amounts or travel points for local public transportation can already be present in the card so that the card can be used quickly and conveniently.

10

For purposes of personal advice, the chip card dispensing station can be connected to an operator via a phone connection. In personal communication between the card user and the operator, questions can be discussed that facilitate the proper preparation of a card for the card user.

15

The chip card dispensing station can contain a device for automatically reading in biometric features. This ensures that a card user can identify himself, for example, by reading in his fingerprint.

20

The chip card dispensing station can automatically establish a connection with various remotely located stations, depending on the selection of a specific card from the magazine. This ensures that the organization responsible for the specifically selected card can influence the menu sequence.

25

In order to be activated, the chip card dispensing station requires the entry of a code in the form of a number and/or of a word and/or the reading in of a chip card and/or of a mechanical/electronic code carrier. In the chip card dispensing station, this code can be compared (decoded) to a code present there by means of an algorithmic procedure and, only after the codes match (after decoding), the functions of the chip card dispensing station can be activated. This serves to rule out unauthorized use of the station.

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The chip card dispensing station can have a distinct code stored in it that can be transferred into the memory of the cards to be initialized. Thus, the cards containing the code can be clearly identified as belonging to the specific chip card dispensing station.

35



Commercial applicability and usefulness:

The invention is commercially applicable for dispensing chip cards of various chip card providers to card users. The usefulness of the invention lies especially in the fact that the chip cards are present in a non-predetermined  
5 manner without association with a specific chip card provider and without association with a specific chip card application, and subsequently, these cards can be issued by the card user in a completely individualized manner for himself or for a certain other person, whereby the card user can anonymously select the chip card provider.



Claims:

1. Process for dispensing individual chip cards to a plurality of individual chip card users, employing a chip card dispensing station with at least one storage container, in which chip  
5 cards are stored which contain those electronic components whose functions are requested by card users for implementing chip card applications, for the subsequent use of the chip cards in external read/write stations, whereby, for purposes of loading a chip card with data, the chip card dispensing station communicates via a user menu with the card user, who enters individual, person-specific or person-related particulars into the chip card dispensing station,



10 wherein a connection is established via a cable-linked and/or radio-linked active data connection to a remotely located verification or monitoring station of various card providers that is either automatic or human-operated, and the personal data is transmitted to the remote verification or monitoring station of the selected card provider, whereby the programs and/or data of the chip card dispensing station can be changed by back-transmitted data and/or



15 programs from the selected remote verification or monitoring station and the chip card is loaded with programs and/or data as a function of the programs and/or data coming from the remote verification or monitoring station, so that the card user operating the menu receives his individual chip card for use, issued by the card provider he has selected from the chip card dispensing station.



20 2. Process according to Claim 1, wherein a first-time functional activation of the chip card, namely, the initialization, is determined inside the chip card dispensing station by programs and/or data from the remote verification or monitoring station.



3. Process according to Claim 1 or 2, wherein to personalize the chip card, it is loaded for the first time with programs and/or data, which are uniquely associated with the user of the chip card and which identifies the user as entitled to use the chip card.

5 4. Process according to Claim 3, wherein to personalize the chip card, a number is entered via the user menu into the chip card dispensing station as a secret number, such as a PIN number, and stored in the card.

5. Process according to any one of preceding claims wherein the chip card dispensing station has a read/write station for chip cards and the user menu asks the user to insert the card into  
10 the read/write station for purposes of checking the functions of the chip card.

6. Process according to Claim 5, wherein the chip card inserted into the read/write station is checked by the remote verification or monitoring station, whereby the further utilization of the chip card is contingent upon the back-transmitted data from the remote verification or monitoring station.

15 7. Process according to any one of the preceding claims wherein the chip card dispensing station has several magazines, separated from each other, whereby different cards are present in each magazine, depending on the technical card configuration and on the different card issuers, and the chip card dispensing station automatically establishes a connection with various remotely located stations, depending on the selection of a specific card from the  
20 magazine.

8. Process according to any one of the preceding claims wherein the chip cards of the chip card dispensing station contain specific pre-initializations in the form of data, which entails special advantages with certain service providers for the card user when using the chip card.



9. Process according to any one of the preceding claims wherein the chip card dispensing station contains a printer that generates a confirmation slip on the transactions made by the chip card user, whereby the data stored in the chip card dispensing station as well as the data of the chip card and its stored contents are printed out.

10. Process according to any one of the preceding claims wherein the chip card dispensing station has a long-term memory and all of the actions and data are available for a later review.

11. Process according to any one of the preceding claims wherein the chip card dispensing station has a magnetic strip read/write device for dispensing chip cards with magnetic strips.

12. Process according to any one of the preceding claims such that via the menu procedures of the chip card dispensing station, an account at a bank or other organization is opened for the card user via the remote verification or monitoring station.

13. Process according to any one of the preceding claims wherein the chip card dispensing station contains a device for automatically reading in biometric features of the card user.

14. Process according to any one of the preceding claims wherein the chip card dispensing station requires the entry of a code in the form of a number and/or of a word and/or the reading in of a chip card and/or of a mechanical/electronic code carrier, whereby the read-in code is compared to a code in the chip card dispensing station and, only after the two codes match, the functions of the chip card dispensing station are activated.

15. Process according to any one of the preceding claims wherein the chip card dispensing station has a distinct code stored in it that is transferred into the memory of the chip cards to be initialized, as a result of which the chip cards containing the code can be clearly identified as belonging to the specific chip card dispensing station.



16. Process according to any one of the preceding claims wherein the chip card dispensing station is equipped with an optical/electronic recording unit for photographing images of persons and/or documents, whereby the recorded pictures are transmitted to the remote station and the chip card dispensing' station stores the optically/electronically recorded data in the chip card.

17. Device for dispensing individual chip cards to a plurality of individual chip card users, with at least one storage container, in which chip cards are stored which contain those electronic components whose functions are requested by card users for implementing chip card applications, for the subsequent use of the chip cards in external read/write stations, whereby, for purposes of loading a chip card with data, the device communicates via a user menu with the card user, who is able to enter individual, person-specific or person-related particulars into the device, for carrying out the process according to any one of the preceding claims wherein the device is equipped with a card printing station, whereby pictures taken by the optical/electronic recording unit can be applied onto the card surface by means of the card printing station.

18. Device according to Claim 17, wherein the device is connected to an operator via a phone connection, and personal communication between the card user and the operator is possible.

19. Process for dispensing individual chip cards substantially as hereinbefore described.

20. Device for dispensing individual chip cards substantially as hereinbefore described.

Dated this 15th day of March 1999

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