Exhibit 5
Part 4
To Third Declaration of
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System anonymous smart card does not identify the card's holder by name. Instead, the DataTreasury™ System anonymous smart card requires only an account number and a password. Since DataTreasury™ system anonymous smart card transactions can be identified without the customer's name, a DataTreasury™ System **100** customer can purchase a DataTreasury™ System anonymous smart card, add money to the card, make expenditures with the card and monitor the card's account with the same degree of privacy as cash acquisition, expenditure and management.

The DAT scanner **202**, the internet access, the signature pad **214** and other biometric data capture devices also support the remote capture of survey information and purchase orders. For example, the DAT scanner **202** captures surveys appearing on the back of checks at restaurants and bars. Similarly, the DAT scanner **202** could capture purchase orders from residences, enabling customers to make immediate purchases from their home of goods promoted through the mail. Accordingly, home marketing merchant could transmit sales in a more cost efficient and reliable manner by using the DAT scanner **202** instead of providing envelopes with prepaid postage to residences.

The DAT scanner **202** also captures receipts which are subsequently needed for tax return preparation or tax audits. Similarly, the DAT scanner **202** captures sales receipts from merchants, providing an off-site secure, reliable repository to guard against loss resulting from flooding, fire or other circumstances. This feature could also allow a merchant to automatically perform inventory in a reliable and cost-effective manner.

The DAT controller **210** performs processing tasks and Input/Output (I/O) tasks which are typically performed by a processor. The DAT controller **210** compresses, encrypts and tags the BI to form a Tagged Encrypted Compressed Bitmap Image (TECBI). The DAT controller **210** also manages the Input/Output (I/O). Specifically, the DAT controller **210** manages devices like the DAT scanner **202**, the DAT digital storage **206**, the optional DAT printer **208** and the DAT modem **204**.

The DAT digital storage **208** holds data such as the TECBI. The DAT modem **204** transmits data from the DAT **200** to the appropriate DAC **400** as instructed by the DAT controller **210**. Specifically, the DAT modem **204** transmits the TECBIs from the DAT digital storage **208** to the appropriate DAC **400**. In the preferred embodiment, the DAT modem **204** is a high speed modem with dial-up connectivity. The DAT digital storage **208** is sufficiently large to store the input data before transmission to a DAC **400**. The DAT digital storage **208** can be Random Access Memory (RAM) or a hard drive.

FIG. **3***a* is a flow chart **300** describing the operation of the DAT in detail. In step **310**, the DAT scanner **202** scans paper receipts into the DAT **200** provided by an operator. In step **312**, the DAT controller **210** determines whether the operation executed successfully. If the scanning is successful, the DAT scanner **202** produces a Bitmap Image (BI). If the scanning is unsuccessful, the DAT controller **210** notifies the operator of the trouble and prompts the operator for repair in step **370**.

If a BI is created, the DAT controller **210** executes a conventional image compression algorithm like the Tagged Image File Format (TIFF) program to compress the BI in step **314**. In step **316**, the DAT controller **210** determines whether the compression executed successfully. If the compression is successful, it produces a Compressed Bitmap Image (CBI). If the compression is unsuccessful, the DAT controller **210** notifies the operator of the trouble and prompts the operator for repair in step **370**.

If a CBI is created, the DAT controller **210** executes an encryption algorithm which is well known to an artisan of ordinary skill in the field to encrypt the CBI in step **318**. Encryption protects against unauthorized access during the subsequent transmission of the data which will be discussed below. In step **320**, the DAT controller **210** determines whether the encryption operation executed successfully. If the encryption is successful, it produces an Encrypted Compressed Bitmap Image (ECBI). If the encryption is unsuccessful, the DAT controller **210** notifies the operator of the trouble and prompts the operator for repair in step **370**.

If an ECBI is created, the DAT controller **210** tags the ECBI with a time stamp which includes the scanning time, an identification number to identify the merchant originating the scan and any additional useful information in step **322**. In step **324**, the DAT controller **210** determines whether the tagging operation executed successfully. If the tagging is successful, it produces a Tagged Encrypted Compressed Bitmap Image (TECBI). If the tagging is unsuccessful, the DAT controller **210** notifies the operator of the trouble and prompts the operator for repair in step **370**.

If a TECBI is created, the DAT controller **210** stores the TECBI in the DAT digital storage **208** in step **326**. In step **328**, the DAT controller **210** determines whether the storing operation executed successfully. If the storing operation is successful, the DAT digital storage **208** will contain the TECBI. If the storing operation is unsuccessful, the DAT controller **210** notifies the operator of the trouble and prompts the operator for repair in step **370**.

If the TECBI is properly stored in the DAT digital storage **208**, the DAT controller **210** determines whether all paper receipts have been scanned in step **330**. If all paper receipts have not been scanned, control returns to step **310** where the next paper receipt will be processed as discussed above. If all paper receipts have been scanned, the DAT controller **210** asks the operator to verify the number of scanned receipts in step **334**. If the number of scanned receipts as determined by the DAT controller **210** does not equal the number of scanned receipts as determined by the operator, the DAT controller **210** asks whether the operator desires to rescan all of the receipts in step **338**.

If the operator chooses to rescan all of the receipts in step **338**, the DAT controller **210** will delete all of the TECBIs associated with the batch from the DAT digital storage **208** in step **342**. After the operator prepares the batch of receipts for rescan in step **346**, control returns to step **310** where the first receipt in the batch will be processed as discussed above.

If the operator chooses not to rescan all of the receipts from the batch in step **338**, control returns to step **334** where the DAT controller **210** asks the operator to verify the number of scanned receipts as discussed above.

If the number of scanned receipts as determined by the DAT controller **210** equals the number of scanned receipts as determined by the operator, the DAT controller **210** prints a batch ticket on the DAT printer **206** in step **350**. The operator will attach this batch ticket to the batch of receipts which have been scanned. This batch ticket shall contain relevant session information such as scan time, number of receipts and an identification number for the data operator. If processing difficulties occur for a batch of receipts after the image capture of flowchart **300**, the batch ticket will enable them to be quickly located for rescanning with the DAT **200**.

In step **354**, the DAT controller **210** determines whether the scan session has completed. If the scan session has not completed, control returns to step **310** where the first receipt in the next batch of the scan session will be processed as discussed above. If the scan session has completed, the DAT controller **210** selectively prints a session report on the DAT printer **206** in step **358**. The DAT controller **210** writes statistical information for the session to the DAT digital storage **208** in step **362**. In step **366**, the DAT controller **210** terminates the session.

FIG. **3***b* displays a sample paper receipt which is processed by the DAT **200** as described by the flowchart in FIG. **3***a*. The sample paper receipt involves a credit card transaction which has four participants:

A. The ISSUER: is an entity such as a bank or corporate financial institution such as GE Capital, GM or AT&T which provides the credit behind the credit card and issues the card to the consumer.

B. The PROCESSOR: executes the processing of an inbound credit card transaction by performing basic transaction validation that includes checking with the ISSUER database to ensure that the credit card has sufficient credit to allow approval of the transaction.

C. The ACOUIRER: specializes in the marketing, installation and support of Point Of Sale (POS) credit card terminals. The acquirer, like the DAC **400** in the DataTreasury™ System **100** acts as an electronic collection point for the initial credit card transaction as the card is inserted into the POS terminal. After acquisition, the acquirer passes the transaction to the PROCESSOR.

D. The MERCHANT: inserts a credit card into a POS terminal and enters the amount of the transaction to initiate the credit card transaction.

In the preferred embodiment, the DAT **200** reads the following information from the sample paper receipt shown in FIG. **3**i band stores the information in the format described below.

CUSTOMER_ID **370**: This field is a 7 position HEX numeric value. This field uniquely identifies the customer using the terminal. In this sample, this field would identify the credit card merchant.

TERMINAL_ID **372**: This field is a 6 position decimal numeric value. This field uniquely identifies the credit card terminal which is used to print the credit card receipt.

TRANSACTION_DATE **374**: This field contains the date and time of the credit card transaction.

TRANSACTION_LINE_ITEM **376**: This field is a variable length character string. The first three positions represent a right justified numeric field with leading zeros indicating the full length of this field. This field contains all data pertaining to the purchased item including the item's price. The DAT **200** will store a TRANSACTION_LINE_ITEM field for each transaction line item on the receipt. This field is optional since not all credit card transactions will have line items.

TRANSACTION_SUBTOTAL **378**: This field is a double precision floating point number. This field indicates the subtotal of the TRANSACTION_LINE_ITEMs.

TRANSACTION_SALES_TAX **380**: This field is a double precision floating point number. This field contains the sales tax of the TRANSACTION_SUBTOTAL.

TRANSACTION_AMOUNT **382**: This field is a double precision floating point number. This field is the sum of the TRANSACTION_SUBTOTAL and TRANSACTION_SALES_TAX.

CREDIT_CARD_ACCT_NUM **384**: This field is a 12 position decimal value. This field identifies the credit card which was used to execute this transaction.

CREDIT_CARD_EXP_DATE **386**: This field identifies the expiration date of the credit card.

TRANSACTION_APPROVAL_CODE **388**: This field is a 6 position numeric value. This field indicates the approval code that was given for the particular transaction.

The DAT **200** also stores additional items which are not pictured in FIG. **3***b* as described below:

ISSUER_ID: This field is a 7 position decimal numeric value. This field identifies the credit card issuer.

ACQUIRER_ID: This field is a 7 position decimal numeric value. This field identifies the acquirer.

PROCESSOR_ID: This field is a 7 position decimal numeric value. This field identifies the processor.

TRANSACTION_LINE_ITEM_CNT: This field is a 3 position decimal numeric value. This field identifies the number of transaction line items on the receipt. A value of ZERO indicates the absence of any transaction line items on the receipt.

TRANSACTION_GRATUITY: This field is a double precision floating number. This field is optional because it will only appear on restaurant or bar receipts.

FINAL_TRANSACTION_AMOUNT: This field is a double precision floating number. This field is optional because it will only appear on restaurant and bar receipts. The field is the sum of the TRANSACTION_AMOUNT and TRANSACTION_GRATUITY.

The tag prepended to the ECBI in step **322** of the flowchart of FIG. **3***a* identifies the time and place of the document's origination. Specifically, the tag consists of the following fields:

DAT_TERMINAL_ID: This field is a 7 position hexadecimal numeric value. This field uniquely identifies the DAT **200** which is used by the customer.

DAT_SESSION_DATE: This field identifies the date and time of the DAT **200** session which generated the image of the document.

DAT_USER_ID: This field is a 4 position decimal numeric value. This field identifies the individual within the CUSTOMER's organization who initiated the DAT **200** session.

DATA_GLYPH_RESULT: This field is a variable length character string. The first four positions hold a right justified numeric position with leading zero which indicate the length of the field. The fifth position indicates the DataGlyph™ element status. A value of 0 indicates that the data glyph was NOT PRESENT on the receipt. A value of 1 indicates that the data glyph WAS PRESENT and contained no errors. A value of 2 indicates that the data glyph WAS PRESENT and had nominal errors. If the fifth position of this field has a value of 2, the remaining portion of the string identifies the erroneous field numbers. As subsequently described, the DPC **600** will reference this portion of the field to capture the erroneous data from the receipt with alternate methods. A value of 3 indicates that the data glyph WAS PRESENT WITH SEVERE ERRORS. In other words, a value of 3 indicates the DataGlyph™ element was badly damaged and unreadable.

The receipt shown in FIG. **3***b* can also contain a signature which can be captured by the DAT scanner **202**. A data glyph could identify the location of the signature on the receipt.

As is known to persons of ordinary skill in the art, the DataTreasury™ System **100** can also process receipts with alternate formats as long as the receipt contains the appropriate identification information such as the transaction amount, the customer, the DAT **200**, the transaction date, the transaction tax, the credit card number, the credit card expiration date, etc.

The DataTreasury™ System **100** partitions the paper receipt into image snippets as illustrated by the sample on FIG. **3***b*. Partitioning facilitates an improvement in the process to correct errors from the scanning operation. If an error occurred during scanning, the DataTreasury™ System **100** corrects the error using manual entry. With partitioning, the DataTreasury™ System **100** focuses the correction effort on only the image snippet having the error instead of correcting the entire document. The subsequently discussed schema of the DataTreasury™ System **100** database describes the implementation of the partitioning concept in detail.

The DACs **400** form the backbone of the tiered architecture shown in FIG. **1** and FIG. **4**. As shown in FIG. **1**, each DAC **400** supports a region containing a group of DATs **200**. Each DAC **400** polls the DATs **200** in its region and receives TECBIs which have accumulated in the DATs **200**. The DACs **400** are located at key central sites of maximum merchant density.

In the preferred embodiment, the DAC server **402** comprises stand-alone Digital Equipment Corporation (DEC) SMP Alpha 4100 2/566 servers which are connected on a common network running Windows NT. The DEC Alpha servers manage the collection and intermediate storage of images and data which are received from the DATs **200**.

As is known to persons of ordinary skill in the art, the DataTreasury™ System **100** could use any one of a number of different servers that are available from other computer vendors as long as the server meets the capacity, performance and reliability requirements of the system.

In the preferred embodiment, the DAC server **402** also comprises EMC **3300** SYMMETRIX CUBE Disk Storage Systems, which store the images and data collected and managed by the DEC Alpha servers. The DAC **400** architecture also uses a SYMMETRIX Remote Data Facility (SRDF), available from EMC, to enable multiple, physically separate data centers housing EMC Storage Systems to maintain redundant backups of each other across a Wide Area Network (WAN). Since SRDF performs the backup operations in the background, it does not affect the operational performance of the DataTreasury™ System **100**. The DAC server **402** also has secondary memory **410**. In the preferred embodiment, the secondary memory **410** is a small scale DLT jukebox.

The DAC Alpha servers of the DAC server **402** insert images and data received from the DATS **200** into a database which is stored on the disk storage systems using a data manipulation language as is well known to persons of ordinary skill in the art. In the preferred embodiment, the database is a relational database available from Oracle.

As is well known to persons of ordinary skill in the art, the DataTreasury™ System **100** could use any one of a number of different database models which are available from other vendors including the entity relationship model as long as the selected database meets the storage and access efficiency requirements of the system. See, e.g., Chapter 2 of Database System Concepts by Korth and Silberschatz.

The DAC **400** architecture uses a WEB based paradigm using an enhanced Domain Name Services (DNS), the Microsoft Component Object Model (DCOM), and Windows NT Application Program Interfaces (APIs) to facilitate communication and load balancing among the servers comprising the DAC server **402**. As is known to persons of ordinary skill in the art, DNS, which is also known as Bind, statically translates name requests to Internet Protocol 4 (IP4) addresses. In the DAC **400** architecture, an enhanced DNS dynamically assigns IP4 addresses to balance the load among the servers comprising the DAC server **402**.

In the preferred embodiment, the enhanced DNS is designed and implemented using objects from Microsoft DCOM. Using the DCOM objects, the enhanced DNS acquires real-time server load performance statistics on each server comprising the DAC server **402** from the Windows NT API at set intervals. Based on these load performance statistics, the enhanced DNS adjusts the mapping of name requests to IP4 addresses to direct data toward the servers which are more lightly loaded.

A large bank of modems **404** polls the DATs **200** at the customer sites within the DAC's **400** region. In the preferred embodiment, the bank of modems **404**, available as CISCO AS5200, is an aggregate **48** modem device with Local Area Network (LAN) **406** connectivity which permits the DAC servers **402** to dial the DATs **200** without requiring **48** separate modems and serial connections.

The DAC servers **402** and the bank of modems **404** are connected on a LAN **406**. In the preferred embodiment, the LAN uses a switched 100BaseT/10BaseT communication hardware layer protocol. As is known to persons of ordinary skill in the art, the 100BaseT/10BaseT protocol is based on the Ethernet model. Further, the numbers 100 and 10 refer to the communication link speed in megabits per second. In the preferred embodiment, the CISCO Catalyst 2900 Network Switch supports the LAN **406** connectivity between the devices connected to the LAN **406** including the DAC servers **402** and the bank of modems **404**.

As is known to persons of ordinary skill in the art, alternate LAN architectures could be used to facilitate communication among the devices of the LAN **406**. For example, the LAN **406** could use a hub architecture with a round robin allocation algorithm, a time division multiplexing algorithm or a statistical multiplexing algorithm.

A Wide Area Network (WAN) router **408** connects the LAN **406** to the WAN to facilitate communication between the DACs **400** and the DPCs **600**. In the preferred embodiment, the WAN router **408** is a CISCO 4700 WAN Router. The WAN router **408** uses frame relay connectivity to connect the DAC LAN **406** to the WAN. As is known to persons of ordinary skill in the art, alternate devices, such as the NORTEL Magellen Passport "50" Telecommunication Switch, could be used to facilitate communication between the DACs **400** and the DPCs **600** as long as the selected router meets the performance and quality communication requirements of the system.

As is known to persons of ordinary skill in the art, frame relay is an interface protocol for statistically multiplexed packet-switched data communications in which variable-sized packets (frames) are used that completely enclose the user packets which they transport. In contrast to dedicated point to point links that guarantee a specific data rate, frame relay communication provides bandwidth on-demand with a guaranteed minimum data rate. Frame relay communication also allows occasional short high data rate bursts according to network availability.

Each frame encloses one user packet and adds addressing and verification information. Frame relay data communication typically has transmission rates between 56 kilobytes per second (kb/s) and 1.544 megabytes per second (Mb/s). Frames may vary in length up to a design limit of approximately 1 kilobyte.

The Telco Carrier Cloud **412** is a communication network which receives the frames destined for the DPC **600** sent by the WAN router **408** from the DACs **400**. As is known to persons of ordinary skill in the art, carriers provide communication services at local central offices. These central offices contain networking facilities and equipment to interconnect telephone and data communications to other central offices within its own network and within networks of other carriers.

Since carriers share the component links of the interconnection network, data communication must be dynamically assigned to links in the network according to availability. Because of the dynamic nature of the data routing, the interconnection network is referred to as a carrier cloud of communication bandwidth.

All the DAC **400** equipment is on fully redundant on-line UPS power supplies to insure maximum power availability. Further, to minimize the time for trouble detection, trouble analysis and repair, all the DAC **400** equipment incorporates trouble detection and remote reporting/diagnostics as is known to an artisan of ordinary skill in the art.

FIG. **5** is a flow chart **500** describing the polling of the DATs **200** by a DAC **400** and the transmission of the TECBIs from the DATs **200** to the DAC **400**. In step **502**, the DAC server **402** reads the address of the first DAT **200** in its region for polling. In step **504**, a modem in the modem bank **404** dials the first DAT **200**. The DAC **400** determines whether the call to the DAT **200** was successful in step **506**. If the call to the first DAT **200** was unsuccessful, the DAC **400** will record the error condition in the session summary report and will report the error to the DPC **600** in step **522**.

If the call to the first DAT **200** was successful, the DAC **400** will verify that the DAT **200** is ready to transmit in step **508**. If the DAT **200** is not ready to transmit, the DAC **400** will record the error condition in the session summary report and will report the error to the DPC **600** in step **522**.

If the DAT **200** is ready to transmit in step **508**, the DAT **200** will transmit a TECBI packet header to the DAC **400** in step **510**. The DAC **400** will determine whether the transmission of the TECBI packet header was successful in step **512**. If the transmission of the TECBI packet header was unsuccessful, the DAC **400** will record the error condition in the session summary report and will report the error to the DPC **600** in step **522**.

If the transmission of the TECBI packet header was successful in step **512**, the DAT **200** will transmit a TECBI packet to the DAC **400** in step **514**. The DAC **400** will determine whether the transmission of the TECBI packet was successful in step **516**. If the transmission of the TECBI packet header was unsuccessful, the DAC **400** will record the error condition in the session summary report and will report the error to the DPC **600** in step **522**.

If the transmission of the TECBI packet was successful in step **516**, the DAC **400**, in step **518**, will compare the TECBI packet header transmitted in step **510** to the TECBI packet transmitted in step **514**. If the TECBI packet header does not match the TECBI packet, the DAC **400** will record the error condition in the session summary report and will report the error to the DPC **600** in step **522**.

If the TECBI packet header matched the TECBI packet in step **518**, the DAC **400** will set the status of the TECBI packet to indicate that it is ready for transmission to the DPC **600** in step **520**. The DAC **400** will also transmit the status to the DAT **200** to indicate successful completion of the polling and transmission session in step **520**. Next, the DAC **400** will determine whether TECBIs have been transmitted from all of the DATs **200** in its region in step **524**. If all DATs **200** in the DAC's **400** region have transmitted TECBIs to the DAC **400**, the DAC **400** will compile a DAT **200** status report in step **528** before terminating the session.

If one or more DATs **200** in the DAC's **400** region have not transmitted TECBIs to the DAC **400**, the DAC **400** will get the address of the next DAT **200** in the region in step **526**. Next, control returns to step **504** where the next DAT **200** in the DAC's **400** region will be polled as previously discussed.

In the preferred embodiment, the DAC server **402** initiates the polling and data transmission at optimum toll rate times to decrease the cost of data transmission. In addition to the raid drives and redundant servers, the DAC **400** will also have dual tape backup units which will periodically backup the entire data set. If there is a catastrophic failure of the DAC **400**, the tapes can be retrieved and sent directly to the DPC **600** for processing. As the DAT **200** polling and data transmission progresses, the DAC **400** will periodically update the DPC **600** with its status. If there is a catastrophic failure with the DAC **400**, the DPC **600** would know how much polling and backup has been done by the failing DAC **400**. Accordingly, the DPC **600** can easily assign another DAC **400** to complete the polling and data transmission for the DATs **200** in the failed DAC's **400** region.

FIG. **6** is a block diagram of the DPC **600** architecture. The DPC **600** accumulates, processes and stores images for later retrieval by DataTreasury™ System retrieval customers who have authorization to access relevant information. DataTreasury™ System retrieval customers include credit card merchants, credit card companies, credit information companies and consumers. As shown in FIG. **6** and FIG. **1**, the DPC **600** polls the DACs **400** and receives TECBIs which have accumulated in the DACs **400**.

In the preferred embodiment, the DPC server **602** comprises stand-alone Digital Equipment Corporation (DEC) SMP Alpha 4100 4/566 servers which are connected on a common network running Windows NT. The DEC Alpha servers manage the collection and intermediate storage of images and data which are received from the DACs **400**.

In the preferred embodiment, the DPC server **602** also comprises EMC **3700** SYMMETRIX CUBE Disk Storage Systems, which store the images and data collected and managed by the DEC Alpha servers. Like the DAC **400** architecture, the DPC **600** architecture uses a SYMMETRIX Remote Data Facility (SRDF), available from EMC, to enable multiple, physically separate data centers housing EMC Storage Systems to maintain redundant backups of each other across a Wide Area Network (WAN).

Like the DAC **400** architecture, the DPC **600** architecture uses a WEB based paradigm using an enhanced Domain Name Services (DNS), the Microsoft Component Object Model (DCOM), and Windows NT Application Program Interfaces (APIs) to facilitate communication and load balancing among the servers comprising the DPC server **602** as described above in the discussion of the DAC **400** architecture.

The workstation **604** performs operation control and system monitoring and management of the DPC **600** network. In the preferred embodiment, the workstation **604**, available from Compaq, is an Intel platform workstation running Microsoft Windows NT 4.x. The workstation **604** should be able to run Microsoft Windows NT 5.x when it becomes available. The workstation **604** executes CA Unicenter TNG software to perform network system monitoring and management. The workstation **604** executes SnoBound Imaging software to display and process TECBIs.

The workstation **604** also performs identification verification by comparing signature data retrieved remotely by the DATs **200** with signature data stored at the DPC **600**. In the preferred embodiment, signature verification software, available from Communications Intelligence Corporation of Redwood Shores, Calif. executing on the workstation **604** performs the identification verification. As is known to persons of ordinary skill in the art, the workstation **604** could execute other software to perform identification verification by comparing biometric data including facial scans, fingerprints, retina scans, iris scans and hand geometry. Thus, the DPC **600** could verify the identity of a person who is making a purchase with a credit card by comparing the biometric data captured remotely with the biometric data stored at the DPC **600**.

As is known to persons of ordinary skill in the art, the DataTreasury™ System **100** could use workstations with central processing units from other integrated circuit vendors as long as the chosen workstation has the ability to perform standard operations such as fetching instructions, fetching data, executing the fetched instructions with the fetched data and storing results. Similarly, the DataTreasury™ System **100** could use alternate windows operating systems and network monitoring software as long as the selected software can monitor the status of the workstations and links in the network and display the determined status to the operator.

The Remote Data Entry Gateway **614** and the Remote Offsite Data Entry Facilities **616** correct errors which occurred during data capture by the DAT **200**. Since the DataTreasury™ System **100** partitions the document as described in the discussion of the sample receipt of FIG. **3***b*, the operator at the Remote Data Entry Gateway **614** or the Remote Offsite Date Entry Facilities **616** only needs to correct the portion of the document or image snippet which contained the error.

Partitioning improves system performance, decreases system cost and improves system quality. With partitioning, the DPC Server **602** only sends the portion of the document containing the error to the Remote Data Entry Gateway **614** or the Remote Offsite Data Entry Facilities **616**. Since the operator at these data entry locations only sees the portion of the document which contained the error, she can quickly recognize and correct the error. Without partitioning, the operator would have to search for the error in the entire document. With this inefficient process, the operator would need more time and would be more likely to make a mistake by missing the error or making a modification in the wrong location. Accordingly, partitioning improves system performance and quality by increasing the speed and accuracy of the error correction process.

Similarly, partitioning decreases the traffic on the DPC LAN **606** and the Telco Carrier Cloud **412** because the DPC Server **602** only sends the image snippet containing the error to the Remote Offsite Data Entry Facility **616** or the Remote Data Entry Gateway **614**. Accordingly, partitioning decreases system cost by reducing the bandwidth requirement on the interconnection networks.

A DPC LAN **606** facilitates communication among the devices which are connected to the LAN **606** including the DPC server **602** and the network workstation **604**. In the preferred embodiment, the DPC LAN **606** uses a switched 100BaseT/10BaseT communication hardware layer protocol like the DAC LAN **406** discussed earlier. In the preferred embodiment, the DPC LAN **406** is a high speed OC**2** network topology backbone supporting TCP/IP. The CISCO Catalyst 5500 Network Switch supports the DPC LAN **606** connectivity among the devices connected to the LAN **606**.

As is known to persons of ordinary skill in the art, alternate LAN architectures could be used to facilitate communication among the devices of the LAN **406**. For example, the LAN **406** could use a hub architecture with a round robin allocation algorithm, a time division multiplexing algorithm or a statistical multiplexing algorithm.

A Wide Area Network (WAN) router **612** connects the DPC LAN **606** to the WAN to facilitate communication between the DACs **400** and the DPCs **600**. In the preferred embodiment, the WAN router **612** is a CISCO 7507 WAN Router. The WAN router **612** uses frame relay connectivity to connect the DPC LAN **612** to the WAN. As is known to persons of ordinary skill in the art, alternate devices, such as the NORTEL Magellen Passport "50" Telecommunication Switch, could be used to facilitate communication between the DACs **400** and the DPCs **600** as long as the selected router meets the performance and quality communication requirements of the system

The DPC **600** has a three tier storage architecture to support the massive storage requirement on the DataTreasury™ System **100**. In the preferred embodiment, the storage architecture consists of Fiber Channel RAID technology based EMC Symmetrix Enterprise Storage Systems where individual cabinets support over 1 Terabyte of storage. After TECBI images have been processed and have been on-line for 30 days, they will be moved to DVD based jukebox systems. After the TECBI images have been on-line for 90 days, they will be moved to Write Once Read Many (WORM) based jukebox systems **608** for longer term storage of up to 3 years in accordance with customer requirements.

In an alternate embodiment, the DPC **600** is intended to also configure a High Density Read Only Memory (HD-ROM) when it becomes available from NORSAM Technologies, Los Alamos, N. Mex., into optical storage jukebox systems **610**, such as that which is available from Hewlett Packard, to replace the DVD components for increased storage capacity. The HD-ROM conforms to CD-ROM form factor metallic WORM disc. The HD-ROM currently has a very large storage capacity of over 320 giga bytes (320 GB) on a single platter and has an anticipated capacity of several terabytes (TB) on a single platter. The DPC **600** uses IBM and Philips technology to read from the HD-ROM and to write to the HD-ROM.

The DPC Alpha servers of the DPC server **602** insert images and data received from the DACs **400** into a single database which is stored on the Digital Storage Works Systems using a data manipulation language as is well known to persons of ordinary skill in the art. In the preferred embodiment, the database is the V8.0 Oracle relational database which was designed to support both data and image storage within a single repository.

As known to persons of ordinary skill in the art, a relational database consists of a collection of tables which have a unique name. See, e.g., Chapter Three of Database System Concepts by Korth and Silberschatz. A database schema is the logical design of the database. Each table in a relational database has attributes. A row in a table represents a relationship among a set of values for the attributes in the table. Each table has one or more superkeys. A superkey is a set of one or more attributes which uniquely identify a row in the table. A candidate key is a superkey for which no proper subset is also a superkey. A primary key is a candidate key selected by the database designer as the means to identify a row in a table.

As is well known to persons of ordinary skill in the art, the DataTreasury™ System **100** could use other database models available from other vendors including the entity relationship model as long as the selected database meets the storage and access efficiency requirements of the system. See, e.g., Chapter 2 of Database System Concepts by Korth and Silberschatz.

An exemplary DPC **600** basic schema consists of the tables listed below. Since the names of the attributes are descriptive, they adequately define the attributes' contents. The primary keys in each table are identified with two asterisks (**). Numeric attributes which are unique for a particular value of a primary key are denoted with the suffix, "NO". Numeric attributes which are unique within the entire relational database are denoted with the suffix, "NUM".

I. CUSTOMER: This table describes the DataTreasury™ System customer.
  - A. **CUSTOMER_ID
  - B. COMPANY_NAME
  - C. CONTACT
  - D. CONTACT_TITLE
  - E. ADDR1
  - F. ADDR2
  - G. CITY
  - H. STATE_CODE
  - I. ZIP_CODE
  - J. COUNTRY_CODE
  - K. VOX_PHONE
  - L. FAX_PHONE
  - M. CREATE_DATE

II. CUSTOMER_MAIL_TO: This table describes the mailing address of the DataTreasury™ System customer.
  - A. **MAIL_TO_NO
  - B. **CUST_ID
  - C. CUSTOMER_NAME
  - D. CONTACT
  - E. CONTACT_TILE
  - F. ADDR1
  - G. ADDR2
  - H. CITY
  - I. STATE_CODE
  - J. ZIP_CODE
  - K. COUNTRY_CODE
  - L. VOX_PHONE
  - M. FAX_PHONE
  - N. CREATE_DATE
  - O. COMMENTS

III. CUSTOMER_DAT_SITE: This table describes the DAT location of the DataTreasury™ System customer.
  - A. **DAT_SITE_NO
  - B. **CUST_ID
  - C. CUSTOMER_NAME
  - D. CONTACT
  - E. CONTACT_TILE
  - F. ADDR1
  - G. ADDR2
  - H. CITY
  - I. STATE_CODE
  - J. ZIP_CODE
  - K. COUNTRY_CODE
  - L. VOX_PHONE
  - M. FAX_PHONE
  - N. CREATE_DATE
  - O. COMMENTS

IV. CUSTOMER_SITE_DAT: This table describes the DAT site(s) of the DataTreasury™ System customer.
  - A. **DAT_TERMINAL_ID
  - B. **DAT_SITE_NO
  - C. **CUST_ID
  - D. INSTALL_DATE
  - E. LAST_SERVICE_DATE
  - F. CREATE_DATE
  - G. COMMENTS

V. DATA_SPEC: This table provides data specifications for document partitioning and extraction.
  - A. **DATA_SPEC_ID
  - B. **CUST_ID
  - C. DESCR
  - D. RECORD_LAYOUT_RULES
  - E. CREATE_DATE
  - F. COMMENTS

VI. DATA_SPEC_FIELD: This table provides field data specifications for document partitioning and extraction.
  - A. **DATA_SPEC_NO
  - B. **DATA_SPEC_ID
  - C. FIELD_NAME
  - D. DESCR
  - E. DATA_TYPE
  - F. VALUE_MAX
  - G. VALUE_MIN
  - H. START_POS
  - I. END_POS
  - J. FIELD_LENGTH
  - K. RULES
  - L. CREATE_DATE
  - M. COMMENTS

VII. TEMPL_DOC: This table specifies the partitioning of a predefined document.
  - A. **TEMPL_DOC_NUM
  - B. DATA_SPEC_ID
  - C. DESCR
  - D. RULES
  - E. CREATE_DATE
  - F. COMMENTS

VIII. TEMPL_FORM: This table defines the location of forms on a predefined document.
  - A. **TEMPL_FORM_NO
  - B. **TEMPL_DOC_NUM
  - C. SIDES_PER_FORM
  - D. MASTER_IMAGE_SIDE_A
  - E. MASTER_IMAGE_SIDE_B
  - F. DISPLAY_ROTATION_A
  - G. DISPLAY_ROTATION_B
  - H. DESCR
  - I. RULES
  - J. CREATE_DATE

IX. TEMPL_PANEL: This table specifies the location of panels within the forms of a predefined document.
  - A. **TEMPL_PANEL_NO
  - B. **TEMPL_SIDE_NO
  - C. **TEMPL_FORM_NO
  - D. **TEMPL_DOC_NUM
  - E. DISPLAY_ROTATION
  - F. PANEL_UL_X
  - G. PANEL_UL_Y
  - H. PANEL_LR_X

I. PANEL_LR_Y
J. DESCR
K. RULES
L. CREATE_DATE

X. TEMPL_FIELD: This table defines the location of fields within the panels of a form of a predefined document.
A. **TEMPL_FIELD_NO
B. **TEMPL_PANEL_NO
C. **TEMPL_SIDE_NO
D. **TEMPL_FORM_NO
E. **TEMPL_DOC_NUM
F. DISPLAY_ROTATION
G. FLD_UL_X
H. FLD_UL_Y
I. FLD_LR_X
J. FLD_LR_Y
K. DESCR
L. RULES
M. CREATE_DATE

XI. DAT_BATCH: This table defines batches of documents which were processed during a DAT session.
A. **DAT_BATCH_NO
B. **DAT_SESSION_NO
C. **DAT_SESSION_DATE
D. **DAT_TERMINAL_ID
E. DAT_UNIT_CNT
F. CREATE_DATE

XII. DAT_UNIT: This table defines the unit in a batch of documents which were processed in a DAT session.
A. **DAT_UNIT_NUM
B. **DAT_BATCH_NO
C. **DAT_SESSION_NO
D. **DAT_SESSION_DATE
E. **DAT_TERMINAL_ID
F. FORM_CNT
G. DOC_CNT
H. CREATE_DATE

XIII. DAT_DOC: This table defines documents in the unit of documents which were processed in a DAT session.
A. **DAT_DOC_NO
B. **DAT_UNIT_NUM
C. DOC_RECORD_DATA
D. CREATE_DATE

The DATA_SPEC, DATA_SPEC_FIELD, TEMPL_DOC, TEMPL_FORM, TEMPL_PANEL and TEMPL_FIELD tables implement the document partitioning algorithm mentioned above in the discussion of the sample receipt of FIG. **3***b*. The cross product of the DATA_SPEC and DATA_SPEC_FIELD tables partition arbitrary documents while the cross product of the TEMPL_DOC, TEMPL_FORM, TEMPL_PANEL and TEMPL_FIELD tables partition predefined documents of the DataTreasury™ System **100**. The TEMPL-FORM defines the location of forms on a predefined document. The TEMPL-PANEL defines the location of panels within the forms of a predefined document. Finally, the TEMPL_FIELD table defines the location of fields within the panels of a form of a predefined document.

The DPC **600** performs data mining and report generation for a wide variety of applications by returning information from the data base. For example, the DPC **600** generates market trend analysis reports and inventory reports for merchants by analyzing the data from receipts captured by the DAT **200**. The DPC **600** also can provide important tax information to the taxpayer in the form of a report or to software applications like tax preparation software by retrieving tax information from the database which originally resided on receipts, documents and electronic transactions captured by the DAT **200**. Similarly, the DPC **600** can also provide tax information for particular periods of time for a tax audit.

FIG. **7** is a flow chart **700** describing the polling of the DACs **300** by a DPC **600** and the transmission of the TECBIs from the DACs **300** to the DPC **600**. In step **702**, the DPC **600** reads the address of the first DAC **300** in its region for polling. In step **704**, the DPC **600** connects with a DAC **300** for transmission. The DPC **600** determines whether the connection to the DAC **300** was successful in step **706**. If the call to the DAC **300** was unsuccessful, the DPC **600** will record the error condition in the session summary report and will report the error to the DPC **600** manager in step **722**.

If the connection to the DAC **300** was successful, the DPC **600** will verify that the DAC **300** is ready to transmit in step **708**. If the DAC **300** is not ready to transmit, the DPC **600** will record the error condition in the session summary report and will report the error to the DPC **600** manager in step **722**.

If the DAC **300** is ready to transmit in step **708**, the DAC **300** will transmit a TECBI packet header to the DPC **600** in step **710**. The DPC **600** will determine whether the transmission of the TECBI packet header was successful in step **712**. If the transmission of the TECBI packet header was unsuccessful, the DPC **600** will record the error condition in the session summary report and will report the error to the DPC **600** manager in step **722**.

If the transmission of the TECBI packet header was successful in step **712**, the DAC **300** will transmit a TECBI packet to the DPC **600** in step **714**. The DPC **600** will determine whether the transmission of the TECBI packet was successful in step **716**. If the transmission of the TECBI packet header was unsuccessful, the DPC **600** will record the error condition in the session summary report and will report the error to the DPC **600** manager in step **722**.

If the transmission of the TECBI packet was successful in step **716**, the DPC **600**, in step **718**, will compare the TECBI packet header transmitted in step **710** to the TECBI packet transmitted in step **714**. If the TECBI packet header does not match the TECBI packet, the DPC **600** will record the error condition in the session summary report and will report the error to the DPC **600** manager in step **722**.

If the TECBI packet header matched the TECBI packet in step **718**, the DPC **600** will set the status of the TECBI packet to indicate that it was received at the DPC **600** in step **720**. The DPC **600** will also transmit the status to the DAC **300** to indicate successful completion of the polling and transmission session in step **720**. Next, the DPC **600** will determine whether TECBIs have been transmitted from all of the DACs **300** in its region in step **724**. If all DACs **300** in the DPC's **600** region have transmitted TECBIs to the DPC **600**, the DPC **600** will compile a DAC **300** status report in step **728** before terminating the session.

If one or more DACs **300** in the DPC's **600** region have not transmitted TECBIs to the DPC **600**, the DPC **600** will get the address of the next DAC **300** in the region in step **726**. Next, control returns to step **704** where the next DAC **300** in the DPC's **600** region will be polled as previously discussed.

FIG. **8** is a flow chart **800** describing the data processing performed by the DPC **600**. In step **802**, the DPC **600** fetches the first TECBI packet. Next, the DPC **600** extracts the first TECBI from the TECBI packet in step **804**. In step **806**, the DPC **600** inserts the TECBI into the database. In step **808**, the DPC **600** extracts the tag header which includes the customer identifier, the encryption keys and the template identifier from the TECBI to obtain the ECBI.

In step **810**, the DPC **600** decrypts the ECBI image to obtain the CBI. In step **812**, the DPC **600** uncompresses the CBI to obtain the BI. In step **814**, the DPC **600** fetches and applies the BI template against the BI. Further the DPC **600** divides the BI into image snippets and tags the BI template with data capture rules in step **814** to form the Tagged Bitmap Image Snippets (TBIS). In step **816**, the DPC **600** submits the TBISs for data capture operations to form the IS Derived Data Record (ISDATA). The DPC **600** discards the TBISs upon completion of the data capture operations in step **816**. In step **818**, the DPC **600** updates the TECBI record in the database with the IS Derived Data.

In step **820**, the DPC **600** determines whether it has processed the last TECBI in the TECBI packet. If the last TECBI in the TECBI packet has not been processed, the DPC **600** extracts the next TECBI from the TECBI packet in step **822**. Next, control returns to step **806** where the next TECBI will be processed as described above.

If the last TECBI in the TECBI packet has been processed, the DPC **600** determines whether the last TECBI packet has been processed in step **824**. If the last TECBI packet has not been processed, the DPC **600** fetches the next TECBI packet in step **826**. Next, control returns to step **804** where the next TECBI packet will be processed as described above. If the last TECBI packet has been processed in step **824**, the DPC **600** terminates data processing.

As is known to persons of ordinary skill in the art, a user can request information from a relational database using a query language. See, e.g., Chapter Three of Database System Concepts by Korth and Silberschatz. For example, a user can retrieve all rows of a database table having a primary key with particular values by specifying the desired primary key's values and the table name on a select operation. Similarly, a user can retrieve all rows from multiple database tables having primary keys with particular values by specifying the desired primary keys' values and the tables with a select operation.

The DataTreasury™ System provides a simplified interface to its retrieval customers to enable data extraction from its relational database as described in FIG. **9**. For example, a DataTreasury™ System customer can retrieve the time, date, location and amount of a specified transaction.

The DPC **600** performs data mining and report generation for a wide variety of applications by returning information from the data base. For example, the DPC **600** generates market trend analysis reports and inventory reports for merchants by analyzing the data from receipts captured by the DAT **200**. The DPC **600** also can provide important tax information to the taxpayer in the form of a report or to tax preparation software by retrieving tax information from the database which originally resided on receipts, documents and electronic transactions captured by the DAT **200**. Similarly, the DPC **600** can also provide tax information for particular periods of time for a tax audit.

FIG. **9** is a flowchart **900** describing the data retrieval performed by the DPC **600**. In step **902**, the DPC **600** receives a TECBI retrieval request. In step **904**, the DPC **600** obtains the customer identifier. In step **906**, the DPC **600** determines whether the customer identifier is valid. If the customer identifier is not valid, control returns to step **904** where the DPC **600** will obtain another customer identifier.

If the customer identifier is valid in step **906**, the DPC **600** will obtain the customer security profile in step **908**. In step **910**, the DPC **600** receives a customer retrieval request. In step **912**, the DPC **600** determines whether the customer retrieval request is consistent with the customer security profile. If the customer retrieval request is not consistent with the customer security profile, control returns to step **910** where the DPC **600** will obtain another customer retrieval request. If the customer retrieval request is consistent with the customer security profile, the DPC **600** will transmit the results to the customer as indicated by the customer security profile in step **914**.

While the above invention has been described with reference to certain preferred embodiments, the scope of the present invention is not limited to these embodiments. One skilled in the art may find variations of these preferred embodiments which, nevertheless, fall within the spirit of the present invention, whose scope is defined by the claims set forth below.

What is claimed is:

1. A system for central management, storage and report generation of remotely captured paper transactions from documents and receipts comprising:

one or more remote data access subsystems for capturing and sending paper transaction data and subsystem identification information comprising at least one imaging subsystem for capturing the documents and receipts and at least one data access controller for managing the capturing and sending of the transaction data;

at least one central data processing subsystem for processing, sending, verifying and storing the paper transaction data and the subsystem identification information comprising a management subsystem for managing the processing, sending and storing of the of the transaction data; and

at least one communication network for the transmission of the transaction data within and between said one or more data access subsystems and said at least one data processing subsystem, with the data access subsystem providing encrypted subsystem identification information and encrypted paper transaction data to the data processing subsystem.

2. A system as in claim **1** wherein said one or more data access subsystems further comprise at least one scanner for capturing the paper transaction data.

3. A system as in claim **2** wherein said one or more data access subsystems also capture electronic transactions from credit cards, smart cards and debit cards, signature data or biometric data, further comprising:

at least one card interface for capturing the electronic transaction data;

at least one signature interface for capturing an electronic signature; and

at least one biometric interface for capturing biometric data.

4. A system as in claim **3** wherein said at least one data access controller successively transforms the captured transaction data to a bitmap image, a compressed bitmap image, an encrypted, compressed bitmap image and an encrypted, compressed bitmap image tagged with information identifying a location and time of the transaction data capture.

5. A system as in claim **4** wherein said one or more data access subsystems further comprise digital storage for storing the tagged, encrypted, compressed bitmap image.

6. A system as in claim **5** wherein said at least one card interface initiates the electronic transaction.

7. A system as in claim **6** wherein said one or more data access subsystems further comprise at least one printer for printing the paper transaction initiated by said at least one card interface.

8. A system as in claim **7** wherein the paper transaction printed by said at least one printer includes data glyphs.

9. A system as in claim **1** wherein said data management subsystem of said at least one data processing subsystem comprises:

at least one server for polling said one or more remote data access subsystems for transaction data;

a database subsystem for storing the transaction data in a useful form;

a report generator for generating reports from the transaction data and providing data to software applications;

at least one central processing unit for managing the storing of the transaction data;

a domain name services program for dynamically assigning one of said at least one server to receive portions of the transaction data for balancing the transaction data among said at least one server; and

a memory hierarchy.

10. A system as in claim **9** wherein said at least one server also polls for biometric and signature data, said database stores the biometric data and the signature data, and said at least one central processing unit verifies the biometric data and the signature data.

11. A system as in claim **9** wherein said memory hierarchy comprises at least one primary memory for storage of recently accessed transaction data and at least one secondary memory for storage of other transaction data.

12. A system as in claim **11** wherein said at least one secondary memory comprises at least one write once read many jukebox and at least one optical storage jukebox.

13. A system as in claim **12** wherein said at least one optical storage jukebox comprises read only memory technology including compact disc read only memory form factor metallic write once read many disc.

14. A system as in claim **9** wherein said database subsystem comprises at least one predefined template for partitioning the stored transaction data into panels and identifying locations of the panels.

15. A system as in claim **14** wherein said data processing subsystem further comprises a data entry gateway for correcting errors in the panels of stored transaction data.

16. A system as in claim **1** wherein said at least one communication network comprises:

at least one first local area network for transmitting data within a corresponding one of said one or more remote data access subsystems;

at least one second local area network for transmitting data within a corresponding one of said at least one data processing subsystem; and

at least one wide area network for transmitting data between said one or more remote data access subsystems and said at least one data processing subsystem.

17. A system as in claim **16** wherein said at least one communication network further comprises:

at least one modem for connecting said at least one first local area network of said one or more data access subsystems to a corresponding one of said at least one second local area network of said at least one data processing subsystem through said at least one wide area network; and

at least one bank of modems for connecting said at least one second local area network of said at least one data processing subsystem to a corresponding some of said at least one first local area network of said one or more data access subsystems through said at least one wide area network.

18. A system as in claim **1** further comprising at least one data collecting subsystem for collecting and sending the electronic or paper transaction data comprising a further management subsystem for managing the collecting and sending of the transaction data.

19. A system as in claim **18** wherein said further data management subsystem of said at least one data collecting subsystem comprises:

at least one server for polling said one or more remote data access subsystems for transaction data;

a database for storing the transaction data in a useful form;

at least one central processing unit for managing the collecting of the transaction data;

a domain name services program for dynamically assigning one of said at least one server to receive portions of the transaction data for balancing the transaction data among said at least one server; and

a memory hierarchy.

20. A system as in claim **19** wherein said memory hierarchy comprises at least one primary memory for collecting transaction data and at least one secondary memory for backup storage of the transaction data.

21. A system as in claim **20** wherein said at least one secondary memory comprises at least one DLT jukebox.

22. A system as in claim **18** wherein said at least one communication network comprises:

at least one first local area network for transmitting data within a corresponding one of said one or more remote data access subsystems;

at least one second local area network for transmitting data within a corresponding one of said at least one data collection subsystem;

at least one third local area network for transmitting data within a corresponding one of said at least one data processing subsystem; and

at least one wide area network for transmitting data between said one or more remote data access subsystems, said at least one data collection subsystem and said at least one data processing subsystem.

23. A system as in claim **22** wherein said at least one communication network further comprises:

at least one first modem for connecting said at least one first local area network of said one or more data access subsystems to a corresponding one of said at least one second local area network through said at least one wide area network;

at least one bank of modems for connecting said at least one second local area network of said at least one data collection subsystem to a corresponding some of said at least one first local area network of said one or more data access subsystems through said at least one wide area network;

at least one first wide area network router for connecting a corresponding one of said at least one second local area network of said at least one data collecting subsystem to said at least one wide area network; and

at least one second wide area network router for connecting a corresponding one of said at least one third local area network of said at least one data processing subsystem to said at least one wide area network.

24. A system as in claim 23 wherein said at least one first wide area network and said at least one second wide area network comprises a carrier cloud, said carrier cloud using a frame relay method for transmitting the transaction data.

25. A system as in claim 22 wherein said at least one second local area network and said at least one third local area network further comprises a corresponding one of at least one network switch for routing transaction data within said at least one second local area network and said at least one third local area network.

26. A method for central management, storage and verification of remotely captured paper transactions from documents and receipts comprising the steps of:

capturing an image of the paper transaction data at one or more remote locations and sending a captured image of the paper transaction data;

managing the capturing and sending of the transaction data;

collecting, processing, sending and storing the transaction data at a central location;

managing the collecting, processing, sending and storing of the transaction data;

encrypting subsystem identification information and the transaction data; and

transmitting the transaction data and the subsystem identification information within and between the remote location(s) and the central location.

27. The method as in claim 26 wherein said managing the capturing and sending step comprises the steps of:

successively transforming the captured transaction data to a bitmap image, a compressed bitmap image, an encrypted, compressed bitmap image and an encrypted, compressed bitmap image tagged with information identifying a location and time of the transaction data capturing; and

storing the tagged, encrypted, compressed bitmap image.

28. The method as in claim 27 wherein said managing the capturing and sending step also captures electronic transactions from credit cards, smart cards and debit cards, signature data or biometric data, further comprising the steps of:

initiating an electronic transaction;

capturing signature data;

capturing biometric data; and

printing a paper transaction with data glyphs for the initiated electronic transaction.

29. A method as in claim 26 wherein:

said capturing and sending step occurs at a plurality of remote locations; and

said collecting, processing, sending and storing step occurs at a plurality of central locations.

30. A method as in claim 29 wherein said collecting, processing, sending and storing step comprises the steps of:

polling the remote locations for transaction data with servers at the central locations;

storing the transaction data at the central location in a memory hierarchy, said storing maintains recently accessed transaction data in a primary memory and other transaction data in a secondary memory; and

dynamically assigning the servers at the central location to receive portions of the transaction data for balancing the transaction data among the servers; and

generating reports from the transaction data and providing data to software applications.

31. A method as in claim 30 wherein said storing the transaction data step comprises the steps of:

partitioning the stored transaction data with predefined templates into panels; and

identifying locations of the panels.

32. A method as in claim 31 wherein said managing the collecting, processing, sending and storing of the transaction data step comprises correcting errors in the panels of stored transaction data.

33. A method as in claim 32 further comprising the steps of:

polling the remote locations for captured electronic data, captured signature data and captured biometric data with servers at the central locations; and

comparing the captured signature data and the captured biometric data to stored signature data and stored biometric data respectively for identification verification.

34. A method as in claim 32 wherein said transmitting the transaction data step comprises the steps of:

transmitting data within the remote locations;

transmitting data from each remote location to a corresponding central location; and

transmitting data within the central locations.

35. A method as in claim 34 wherein said transmitting data from each remote location to a corresponding central location step comprises the steps of:

connecting each remote location to a corresponding central location; and

connecting each central location to corresponding remote locations.

36. A method as in claim 29 further comprising the steps of:

collecting and sending the electronic or paper transaction data at intermediate locations;

managing the collecting and sending of the transaction data; and

transmitting the transaction data within the intermediate location and between the intermediate locations and the remote locations and the central locations.

37. A method as in claim 36 wherein said managing the collecting and sending step comprises the steps of:

polling the remote locations for transaction data with servers in the intermediate locations;

storing the transaction data in the intermediate locations in a useful form, said storing maintains the transaction data in a primary memory of a memory hierarchy and performs backup storage of the transaction data into a secondary memory of the memory hierarchy; and

dynamically assigning the servers to receive portions of the transaction data for balancing the transaction data among the servers.

38. The method as in claim 36 wherein said transmitting the transaction data step comprises the steps of:

transmitting data within the remote locations;

transmitting data from each remote location to a corresponding intermediate location;

transmitting data within the intermediate locations;

transmitting data from each intermediate location to corresponding central locations; and

transmitting data within the central locations.

39. A method as in claim 38 wherein said transmitting data from each remote location to corresponding intermediate locations step comprises the steps of:

connecting each remote location to a corresponding intermediate location; and connecting the intermediate locations to corresponding remote locations.

40. A method as in claim **38** wherein said transmitting data from each intermediate location to corresponding central locations comprises the steps of:

connecting each intermediate location to an external communication network; and

connecting the corresponding central locations to the communication network.

41. A method as in claim **40** wherein said transmitting data from each intermediate location to corresponding central locations step further comprises the steps of:

packaging the transaction data into frames; and

transmitting the frames through the external communication network.

42. A communication network for the transmission of data within and between one or more remote data processing subsystems, at least one intermediate data collecting subsystem and at least one central subsystem forming a tiered architecture wherein each of said at least one central data processing subsystem communicate with a corresponding some of said at least one data collecting subsystem and each of said at least one data collecting subsystem communicate with a corresponding some of said one or more data processing subsystems, said data processing subsystem including an imaging subsystem for capturing images of documents and receipts, comprising:

at least one first local area network for transmitting data within a corresponding one of said one or more remote subsystems;

at least one second local area network for transmitting data within a corresponding one of said at least one intermediate subsystem;

at least one third local area network for transmitting data within a corresponding one of said at least one central subsystem; and

at least one wide area network for transmitting data between said one or more remote subsystems, said at least one intermediate subsystem and said at least one central subsystem.

43. A communication network as in claim **42** further comprising:

at least one first modem for connecting said at least one first local area network of said one or more remote subsystems to a corresponding one of said at least one second local area network through said at least one wide area network;

at least one bank of modems for connecting said at least one second local area network of said at least one intermediate subsystem to a corresponding some of said at least one first local area network of said one or more remote subsystems through said at least one wide area network;

at least one first wide area network router for connecting a corresponding one of said at least one second local area network of said at least one intermediate subsystem to said at least one wide area network; and

at least one second wide area network router for connecting a corresponding one of said at least one third local area network of said at least one central subsystem to said at least one wide area network.

44. A system as in claim **43** wherein said at least one first wide area network and said at least one second wide area network comprises a carrier cloud which utilizes a frame relay method for transmitting the transaction data.

45. A system as in claim **44** wherein said at least one second local area network and said at least one third local area network further comprises a corresponding one of at least one network switch for routing transaction data within said at least one second local area network and said at least one third local area network; and further wherein said data comprises (a) electronic transactions from credit cards, smart cards and debit cards, signature data or biometric data, or (b) paper transactions from documents and receipts.

46. A method for transmitting data within and between one or more remote subsystems, at least one intermediate subsystem and at least one central subsystem in a tiered manner wherein each of the central subsystems communicate with at least one intermediate subsystem and each of the intermediate subsystems communicate with at least one remote subsystems comprising the steps of:

capturing an image of documents and receipts and extracting data therefrom;

transmitting data within the remote locations;

transmitting data from each remote location to corresponding intermediate location;

transmitting data within the intermediate locations;

transmitting data from each intermediate location to corresponding central locations; and

transmitting data within the central locations.

47. A method as in claim **46** wherein said transmitting data from each remote location to corresponding intermediate locations step comprises the steps of:

connecting each remote location to a corresponding intermediate location; and

connecting the intermediate locations to corresponding remote locations.

48. A method as in claim **47** wherein said transmitting data from each intermediate location to corresponding central locations comprises the steps of:

connecting each intermediate location to an external communication network; and

connecting the corresponding central locations to the external communication network.

49. A method as in claim **48** wherein said transmitting data from each intermediate location to corresponding central locations step further comprises the steps of:

packaging the transaction data into frames; and

transmitting the frames through the external communication network.

50. A method as in claim **46** wherein said data is obtained from (a) electronic transactions from credit cards, smart cards and debit cards, signature data or biometric data, or (b) paper transactions from documents and receipts.

* * * * *

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(12) **EX PARTE REEXAMINATION CERTIFICATE** (5957th)

United States Patent

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(54) **REMOTE IMAGE CAPTURE WITH CENTRALIZED PROCESSING AND STORAGE**

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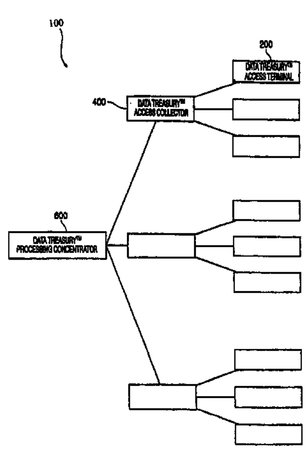
(57) **ABSTRACT**

A system for remote data acquisition and centralized processing and storage is disclosed called the DataTreasury™ System. The DataTreasury™ System provides comprehensive support for the processing of documents and electronic data associated with different applications including sale, business, banking and general consumer transactions. The system retrieves transaction data at one or more remote locations, encrypts the data, transmits the encrypted data to a central location, transforms the data to a usable form, performs identification verification using signature data and biometric data, generates informative reports from the data and transmits the informative reports to the remote location(s). The DataTreasury™ System has many advantageous features which work together to provide high performance, security, reliability, fault tolerance and low cost. First, the network architecture facilitates secure communication between the remote location(s) and the central processing facility. A dynamic address assignment algorithm performs load balancing among the system's servers for faster performance and higher utilization. Finally, a partitioning scheme improves the error correction process.



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