

Title

Secure network electronic transactions and payments system.

Description***Field of the Invention***

The present invention relates to the electronic payment in exchange for goods and services purchased over a communication network, and more specifically, and more particularly, to a system, method and article of manufacture for securely transmitting both transaction instruction and payment instruction from a customer to a merchant through a payment gateway, and returning appropriate, secure authorisation to the merchant and the customer.

Background of the Invention

It is desirable for a computer operated by the merchant that offers goods and services for sale over a publicly accessible packet-switched network such as the Internet to be able to confirm that the

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order was made by the customer who is identified in the transaction instruction as the customer and that the payment instruction is from the customer. It is also desirable that the customer has the means to effect payment, that the merchant has the assurance that the customer has such means to effect payment, and that the confirmation of authorization for payment be made by a payment gateway computer system that is operated by a bank or other financial institution that has the legal and contractual responsibility for providing payment on behalf of the customer, and to authorize the commercial transaction on behalf of the customer. It is further desirable that where the transaction instruction and the payment instruction are being transmitted over any communication channel, that information about the customer's transaction instruction and payment instruction is kept secure and that only the relevant information is provided to the merchant for processing the transaction, all the while ensuring that the risk of exposing any such relevant information such as credit card and debit card

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numbers to interception by third parties and for false authorization of payment to be effected is minimized.

Various such attempts have been devised. One such attempt is to provide a secure transmission channel for transmission of payment information such as Secure Electronic Transaction (hereinafter "SET"), jointly developed by the Visa and Mastercard card associations, and described in Visa and MasterCard's Secure Electronic Transaction (SET) Specification, Feb. 23, 1996, hereby incorporated by reference. Other similar payment technologies include Secure Transaction Technology ("STT"), Secure Electronic Payments Protocol ("SEPP"), Internet Keyed Payments ("iKP"), Net Trust and Cybercash Credit Payment Protocol. One of ordinary skill in the art will readily comprehend that any of the secure payment technologies can be substituted for the SET protocol without undue experimentation. Such secure payment technologies require the customer to operate software that is compliant with the secure payment technology. A drawback to the secure payment

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technology is that its deployment cost is very high as it requires the deployment of special-purpose hardware and software by the customer, the merchant and the bank or financial institution. In particular, the use of cross-country certification authorities requires substantial investments in the infrastructure, as well as co-ordination between the various certification authorities around the world by way, for example, of cross-certification mechanisms and implementation of certification authority root digital certificates.

Such an infrastructure also requires the implementation of various redundant payment gateways to process payment instructions, which further increases costs and adds to the complexity of the entire system.

Another attempt is to provide a general secure transmission channel for transmission of information in general. An instance of such an attempt is Netscape, Inc's Secure Sockets Layer (hereinafter "SSL"). The SSL Protocol version 3.0, March 1996, is hereby incorporated by reference. SSL provides a

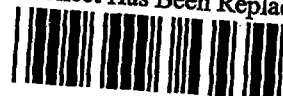
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means for secure transmission between two computers. Other similar technologies include Private Communications Technology ("PCT") from Microsoft, Secure Hyper-Text Transport Protocol ("SHTTP") from Theresa Systems. While it has the advantage that it does not require the customer to install special software, as such technology is already incorporated into the software used by the customer, for example, the Microsoft Internet Explorer and the Netscape Navigator World Wide Web browsing tool, SSL is designed primarily for two-computer communications, and it does not provide a mechanism for transmitting different types of encoded information to a merchant and to a payment gateway that will minimize the risk of exposing any relevant and important information such as credit card and debit card numbers to the merchant and to minimize abuse of that information if intercepted by third parties.

More importantly, the above technologies involving the use of secure transmission channels do not inhibit, stop or reduce the incidents of electronic commerce frauds. A very large proportion of

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electronic commerce conducted over the Internet today is conducted through the use of credit cards. Credit card information is transmitted over the Internet to the merchant's computer from the customer computer through public communications channels. While security in transmission channels such as SET and SSL will minimize incidents of unauthorized third party interception of credit card information, these security measures are no assurance that the merchants' computers themselves are secure from unauthorized third party access, or even from unauthorized access by rogue employees operating the merchants' computers. Merchants' computers become favourite targets for unauthorized access because they will contain many records of transactions, and credit card numbers from authentic cardholders will comprise part of the information stored.

Once unauthorized access is achieved, access can be obtained to many of these credit cards and fraudulent transactions can be conducted without the knowledge of the credit card holder as well as the

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merchant, both of whom are innocent parties. For instance, a story was reported in InternetNew.com on January 12, 2000 about how a Russian cracker stole 300,000 credit card numbers from the electronic commerce retailer CDuniverse and dispensed them for free to visitors to his website in December 1999. But a merchant who is provided a credit card number has to accept it and complete the transaction if the credit card network provides an approval code. The approval code will be given because the card is not reported lost. Nor will the credit card holder know of such a fraudulent transaction and be aware that something is amiss unless and until he receives his monthly credit statement. For this same reason, the banks issuing credit cards and making payments to the merchants will not have any notice of any frauds. VISA reports that roughly 8 cents of every US\$100 spent on line is lost to fraud.

While this percentage may seem small, in the context of the business-to-consumer electronic commerce market which was estimated to worth about US\$7 billion in 1998, these losses can be very

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substantial. Such losses will ultimately have to be borne by the customer and the merchant.

It is no surprise that this has given rise to consumer mistrust in electronic commerce. A VISA survey shows that currently, only 5% of consumers trust electronic commerce on the Internet, as opposed to 60% who trust telephone banking. And surveys have shown that the biggest concern of consumers is the transmission of their credit card numbers on the Internet. Unfortunately, the transmission of such information is prescribed by the secure transmission payment and communication technologies such as SET and SSL described above.

Neither is digital cash a viable solution. The very advantage which digital cash provides, namely, that it gives merchants the immediate assurance of payment for all transactions, is a disadvantage because of consumer perceptions that these could be instruments of fraud in the electronic environment. As a result, many of the digital cash implementations restrict the maximum value of the transaction traded using digital cash, which in

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turn, restricts the acceptance of digital cash by the merchants. Also, digital cash has not received widespread acceptance, and there are issues of controls over national currencies, currency denominations and currency exchange controls which further hinder the acceptance of digital cash.

The development of electronic commerce is at a critical juncture. Consumer demand for secure but convenient access to electronic shopping and other services is very high. Electronic commerce merchants want simple, cost-effective methods for conducting electronic transactions, and financial institutions want a level playing field to be able to make available their existing banking and finance infrastructure to both consumers and merchants. The next step towards achieving secure, cost-effective, on-line transactions to satisfy market demand for such technologies is the development of a single, open, industry standard secure electronic transaction system that takes all these concerns into account, and leverages on existing banking and finance infrastructure.

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Objects of the Invention

It is desirable to provide a secure electronic transaction and payment system that provides confidentiality of payment information, especially where such information is transmitted along with transaction information, by separating the transaction information from the payment information, and by ensuring that important payment information such as credit and debit card numbers are not passed across an open network or to the merchant but is only received and held by the customer's bank. It is further desirable that the merchant is provided a means by which the merchant can have the assurance and confidence that he is dealing with the customer as the legitimate user of a payment card, by way of confirmation by the customer's bank or financial institution, and that the customer has the means to pay for the transaction, so that the merchant's payment is guaranteed. It is also further desirable that the transaction and payment system is simple but still secure, facilitated in part by a reduction in the

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number of participating entities, the optional use of payment gateways and an overall reduction in the complexity of the transaction and payment process, thus leading to lowering of setup and maintenance costs for merchant. Finally, it is desirable that the system gives customers, banks and financial institutions as well as merchants the greatest flexibility to use all possible payment mechanisms for electronic payment purposes, as well as to take advantage of existing banking and financial infrastructure, which is built on offline, closed and/or private communication channels, which are much more secure, thereby achieving the overall object of promoting the widespread acceptance of this system.

Summary of the Invention

According to a broad aspect of a preferred embodiment of the invention, a secure electronic transaction and payment system is provided between a plurality of computer systems and other electronic terminals over a combination of a public

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communication system such as the Internet and a closed communication system such as a banking network. Secure transmission of transaction information instructions and payment instructions is provided from a customer computer system to the customer's bank's computer system, which then authenticates the instructions and issues the confirmed order with the confirmation of payment (without the other confidential and private financial details such as account and cardnumbers) to the merchant via a secure transmission to the merchant.

Description of the Drawing

The foregoing and other objects, aspects and advantages are better understood from the following detailed description of a preferred embodiment of the invention with reference to the drawings, in which:

FIG. 1 depicts an overview of the method of securely transmitting transaction and payment instructions

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between the customer, the merchant and the customer bank in accordance with a preferred embodiment.

FIG. 2 depicts the invention in overview in accordance with the use of a certification authority and a payment gateway as yet another preferred embodiment.

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Detailed Description

FIG. 1 depicts an overview of the method of securely transmitting transaction and payment instructions between customer, merchant and customer bank. The method starts with the customer's computer 1 establishing a communication with one or more merchants' computers 3 via a communication channel such as the Internet 2. The customer's computer 1 will receive from the merchants' computers 3 information about various goods or services 4 via the Internet 2. This information about goods or services will be assembled and processed by customer's computer 1. Upon the customer confirming the purchase of the goods or services, customer's computer 1 will issue a transaction information and payment authorization instruction 5 to the customer's bank's computer 6. The customer's bank's computer will process the transaction information and payment authorization instruction 5 and upon ascertaining the validity of the transaction information and payment authorization instruction 5,

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customer's bank's computer 6 will issue a confirmed order and payment instruction 7 to one or more of the merchants' computers 3.

In another embodiment of the invention, the customer's transaction instruction and payment authorization instruction and/or the customer's bank's computer's confirmed order and payment instruction may be via a payment gateway.

FIG. 2 depicts an overview of a further embodiment of the method of securely transmitting transaction and payment instructions between customer, merchant and customer bank. The method starts with the customer's computer 1 establishing a communication with one or more merchants' computers 3 via a communication channel such as the Internet 2. The customer's computer 1 will receive from the merchants' computers 3 information about various goods or services 4 via the Internet 2. This information about goods or services will be assembled and processed by customer's computer 1. Upon the customer confirming the purchase of the goods or services, customer's computer 1 will issue

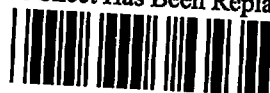
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a transaction information and payment authorization instruction 5 to the customer's bank's computer 6. To mutually authenticate the identities of the customer and the customer's bank and to verify the authenticity of the transaction information and payment authorization instruction 5, customer's computer 1 and customer's bank's computer 6 will issue and receive authentication instructions and messages 10 from the certification authority 11. After successful authentication, the customer's bank's computer 6 will process the transaction information and payment authorization instruction 5 and will issue a confirmed order and payment instruction 7 to a gateway computer 8 which will in turn transmit the confirmed order and payment instruction 7 to the merchant's computer 3. Through the use of the same payment gateway computer 8, the merchant's computer 3, the customer's bank's computer 6, and the merchant's bank's computer will process the confirmed order and payment instruction 7.

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**Claims**

1. A method for initiating and conducting secure electronic transactions between a customer's computer, one or more merchants' computers belonging to one or more merchants and a customer's bank's computer operated by one or more customer's banks, connected to each other by one or more communications channels for transmitting and receiving a transaction information instruction and a payment authorisation instruction, comprising the steps of:

- (a) establishing a communication between said customer's computer and said merchants' computers via a communications channel;
- (b) receiving at said customer's computer information about goods or services from one or more said merchants' computers;
- (c) assembling at said customer's computer raw transaction information about one or more said goods or services selected or ordered by said



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customer from one or more of said merchants' computers;

- (d) processing said raw transaction information at said customer's computer, to produce a transaction information instruction in relation to one or more of said merchants' computers;
- (e) selecting from said customer's computer a said customer's bank to which customer will issue said transaction information instruction and issue the corresponding payment authorisation instruction on behalf of the customer;
- (f) establishing a communication between said customer's computer and said merchant's computer via a communications channel;
- (g) transmitting said transaction information instruction and said payment authorisation instruction for one or more of said merchants from said customer's computer to said customer's bank's computer;
- (h) processing said transaction information instruction and payment authorisation





instruction for one or more of said merchants at said customer's bank's computer, to produce a confirmed order and payment instruction for each said merchant, wherein said confirmed order and payment instruction to said merchant only contains such information from said customer's payment authorisation instruction as is necessary and required for said merchant to process said transaction for said goods and services and/or deliver the said goods and services and does not contain information in said customer's payment authorisation instruction that is considered confidential or private to said customer.

- (i) processing said confirmed order and payment instruction to substantially comply with the protocol used by said merchant's computer for further processing of the transaction;
- (j) establishing a communication between said customer's bank's computer and said merchant's computer via said communications channel;





- (k) transmitting said processed confirmed order and payment instruction from said customer's bank's computer to said merchant's computer;
 - (l) processing the confirmed order and payment instruction at said merchant's computer;
 - (m) perform further ancillary transaction processing on said transaction information instruction and payment authorisation instruction for said customer; and
 - (n) performing further ancillary payment processing on said confirmed order and payment instruction and said payment authorisation instruction for said merchant.
2. The method as recited in claim 1, including the step of collating the raw transaction information into a database for purposes of assembling and processing said raw transaction information.
3. The method as recited in claim 1, including the step of utilising the Internet to establish a communication between said customer's computer and said merchant's computer.





4. The method as recited in claim 1, including the step of utilising the Internet to establish a communication between said customer's computer and said customer's bank's computer.

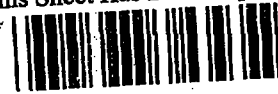
5. The method as recited in claim 1, including the step of utilising the Internet to establish a communication between said customer's bank's computer and said merchant's computer.

6. The method as recited in claim 1, including the step of utilising a telephone, a leased line or a private channel to establish a communication between said customer's computer and said customer's bank's computer.

7. The method as recited in claim 1, including the step of utilising a telephone, a leased line or a private channel to establish a communication between said customer's bank's computer and said merchant's computer.

8. The method as recited in claim 1, including the step of utilising an encryption and a decryption algorithm whether before or after transmission to





encrypt and decrypt one or more messages comprising said transaction information instruction and said payment authorisation instruction for one or more of said merchants from said customer's computer to said customer's bank's computer.

9. The method as recited in claim 1, including the step of utilising an encryption and a decryption algorithm whether before or after transmission to encrypt and decrypt one or more messages comprising said confirmed order and payment instruction for one or more of said merchants from said customer's bank's computer to said merchant's computer.

10. The method as recited in claim 1, including the step of transmitting authentication information and authentication instruction from said customer's bank's computer to a certification authority computer, and from said customer's computer to said certification authority computer, to authenticate the identities of said customer or said customer bank or both said customer and said customer bank and to authenticate said transaction information instruction or payment authorisation instruction or

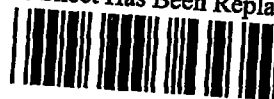




both transaction information instruction and payment authorisation instruction from said customer's computer to said customer's bank's computer before processing of said transaction information instruction or payment authorisation instruction or both transaction information instruction and payment authorisation instruction.

11. The method as recited in claim 1, including the step of utilising authentication mechanisms such as login identities or passwords or one or more electronic signatures of said customer or said customer bank or both said customer and said customer bank to authenticate the identities of said customer or said customer bank or both said customer and said customer bank and to authenticate said transaction information instruction or payment authorisation instruction or both transaction information instruction and payment authorisation instruction from said customer's computer to said customer's bank's computer before processing of said transaction information instruction or payment authorisation instruction or both transaction





information instruction and payment authorisation instruction.

12. The method as recited in claim 1, including the step of transmitting authentication information and authentication instruction from said customer's bank's computer to a certification authority computer, and from said merchant's computer to said certification authority computer, to authenticate the identities of said customer bank or said merchant or both said customer bank and said merchant and to authenticate said confirmed order and payment instruction from said customer's bank's computer to said merchant's computer before processing of said confirmed order and payment instruction.

13. The method as recited in claim 1, including the step of utilising authentication mechanisms such as login identities or passwords or one or more electronic signatures of said customer bank or said merchant or both said customer bank and said merchant to authenticate the identities of said customer bank or said merchant or both said customer





bank and said merchant and to authenticate said confirmed order and payment instruction from said customer's bank's computer to said merchant's computer before processing of said confirmed order and payment instruction.

14. The method as recited in claim 1, wherein said customer's bank is a bank or a financial institution that has issued a credit or debit payment card to the customer and will confirm payment made using said customer's said credit or debit payment card upon receiving said customer's payment authorisation instruction in accordance with said customer's bank's rules and regulations.

15. The method as recited in claim 1, including the step of utilising a gateway computer to facilitate communication by processing payment instructions between said customer's computer and said merchant's computer.

16. The method as recited in claim 1, including the step of utilising a gateway computer to facilitate communication by processing payment instructions





between said merchant's computer and said merchant's computer.

17. The method as recited in claim 1, further comprising reversing one or more previous confirmed order and payment instructions, payment authorisation instructions and transaction information instructions.

18. The method as recited in claim 1, further comprising the steps of:

- (a) establishing a communication between said customer's bank's computer and a third computer trusted by the merchant;
- (b) processing said confirmed order and payment instruction to substantially comply with protocol required by same said third computer for further processing of payment transaction;
- (c) transmitting said processed confirmed order and payment instruction from customer's bank's computer to same said third computer;
- (d) establishing a communication between said third computer and said merchant's computer;





- (e) transmitting said processed confirmed order and payment instruction from said third computer to said merchant's computer; and
- (f) performing further ancillary processing on said confirmed order and payment instruction for said merchant.

19. The method as recited in claim 0, including the step of utilising an encryption and a decryption algorithm whether before or after transmission to encrypt and decrypt one or more messages comprising said confirmed order and payment instruction for one or more of said merchants from said customer's bank's computer to said merchant bank computer.

20. The method as recited in claim 0, including the step of utilising a gateway computer to facilitate communication by processing payment instructions between said merchant's computer and said third computer.

21. The method as recited in claim 0, wherein said third computer is a merchant bank computer operated by a bank or financial institution with which said





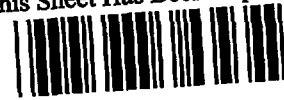
merchant establishes an account and which also processes said confirmed order and payment instructions on said merchant's account.

22. The method as recited in claim 0, wherein said third computer is operated by a bank or a financial institution that acquires said customer payment authorisation instructions for credit cards or debit cards for and on behalf of said merchant's account.

23. The method as recited in claim 0, further comprising reversing one or more previous confirmed order instructions, payment authorisation instructions and transaction information instructions.

24. Apparatus for initiating and conducting secure electronic transactions between a customer's computer, one or more merchants' computers belonging to one or more merchants and a customer's bank's computer operated by one or more customer banks, connected to each other by one or more communications channels for transmitting and receiving a transaction information instruction and

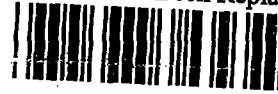




a payment authorisation instruction, comprising the means for:

- (a) establishing a communication between said customer's computer and said merchant's computer via a communications channel;
- (b) receiving at said customer's computer information about goods or services from one or more said merchants' computers;
- (c) assembling at said customer's computer raw transaction information about one or more said goods or services selected or ordered by said customer from one or more of said merchants' computers;
- (d) processing said raw transaction information at said customer's computer, to produce a transaction information instruction in relation to one or more of said merchants' computers;
- (e) selecting from said customer's computer a said customer's bank to which customer will issue said transaction information instruction and





issue the corresponding payment authorisation instruction on behalf of the customer;

- (f) establishing a communication between said customer's computer and said merchant's computer via a communications channel;
- (g) transmitting said transaction information instruction and said payment authorisation instruction for one or more of said merchant from said customer's computer to said customer's bank's computer;
- (h) processing said transaction information instruction and payment authorisation instruction for one or more of said merchants at said customer's bank's computer, to produce a confirmed order and payment instruction for each said merchant, wherein said confirmed order and payment instruction to said merchant only contains such information from said customer's payment authorisation instruction as is necessary and required for said merchant to process said transaction for said goods and





services and/or deliver the said goods and services and does not contain information in said customer's payment authorisation instruction that is considered confidential or private to said customer.

- (i) processing said confirmed order and payment instruction to substantially comply with the protocol used by said merchant's computer for further processing of the transaction;
- (j) establishing a communication between said customer's bank's computer and said merchant's computer via said communications channel;
- (k) transmitting said processed confirmed order and payment instruction from said customer's bank's computer to said merchant's computer;
- (l) processing the confirmed order and payment instruction at said merchant's computer;
- (m) perform further ancillary transaction processing on said transaction information instruction and payment authorisation instruction for said customer; and





(n) performing further ancillary payment processing on said confirmed order and payment instruction and said payment authorisation instruction for said merchant.

25. The apparatus as recited in claim 0, including the means for collating the raw transaction information into a database for purposes of assembling and processing said raw transaction information.

26. The apparatus as recited in claim 0, including the means for utilising the Internet to establish a communication between said customer's computer and said merchant's computer.

27. The apparatus as recited in claim 0, including the means for utilising the Internet to establish a communication between said customer's computer and said customer's bank's computer.

28. The apparatus as recited in claim 0, including the means for utilising the Internet to establish a communication between said customer's bank's computer and said merchant's computer.





29. The apparatus as recited in claim 0, including the means for utilising a telephone, a leased line or a private channel to establish a communication between said customer's computer and said customer's bank's computer.

30. The apparatus as recited in claim 0, including the means for utilising a telephone, a leased line or a private channel to establish a communication between said customer's bank's computer and said merchant's computer.

31. The apparatus as recited in claim 0, including the means for utilising an encryption and a decryption algorithm whether before or after transmission to encrypt and decrypt one or more messages comprising said transaction information instruction and said payment authorisation instruction for one or more of said merchants from said customer's computer to said customer's bank's computer.

32. The apparatus as recited in claim 0, including the means for utilising an encryption and a





decryption algorithm whether before or after transmission to encrypt and decrypt one or more messages comprising said confirmed order and payment instruction for one or more of said merchants from said customer's bank's computer to said merchant's computer.

33. The apparatus as recited in claim 0, including the means for transmitting authentication information and authentication instruction from said customer's bank's computer to a certification authority computer, and from said customer's computer to said certification authority computer, to authenticate the identities of said customer or said customer bank or both said customer and said customer bank and to authenticate said transaction information instruction or payment authorisation instruction or both transaction information instruction and payment authorisation instruction from said customer's computer to said customer's bank's computer before processing of said transaction information instruction or payment authorisation instruction or both transaction





information instruction and payment authorisation instruction.

34. The apparatus as recited in claim 0, including the means for utilising authentication mechanisms such as login identities or passwords or one or more electronic signatures of said customer or said customer bank or both said customer and said customer bank to authenticate the identities of said customer or said customer bank or both said customer and said customer bank and to authenticate said transaction information instruction or payment authorisation instruction or both transaction information instruction and payment authorisation instruction from said customer's computer to said customer's bank's computer before processing of said transaction information instruction or payment authorisation instruction or both transaction information instruction and payment authorisation instruction.

35. The apparatus as recited in claim 0, including the means for transmitting authentication information and authentication instruction from said





customer's bank's computer to a certification authority computer, and from said merchant's computer to said certification authority computer, to authenticate the identities of said customer bank or said merchant or both said customer bank and said merchant and to authenticate said confirmed order and payment instruction from said customer's bank's computer to said merchant's computer before processing of said confirmed order and payment instruction.

36. The apparatus as recited in claim 0, including the means for utilising authentication mechanisms such as login identities or passwords or one or more electronic signatures of said customer bank or said merchant or both said customer bank and said merchant to authenticate the identities of said customer bank or said merchant or both said customer bank and said merchant and to authenticate said confirmed order and payment instruction from said customer's bank's computer to said merchant's computer before processing of said confirmed order and payment instruction.



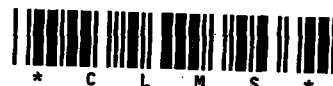


37. The apparatus as recited in claim 0, wherein said customer's bank is a bank or a financial institution that has issued a credit or debit payment card to the customer and will confirm payment made using said customer's said credit or debit payment card upon receiving said customer's payment authorisation instruction in accordance with said customer's bank's rules and regulations.

38. The apparatus as recited in claim 0, including the means for utilising a gateway computer to facilitate communication by processing payment instructions between said customer's computer and said merchant's computer.

39. The apparatus as recited in claim 0, including the means for utilising a gateway computer to facilitate communication by processing payment instructions between said merchant's computer and said merchant's computer.

40. The apparatus as recited in claim 0, further comprising reversing one or more previous confirmed order and payment instructions, payment





authorisation instructions and transaction
information instructions.

41. The apparatus as recited in claim 0, further
comprising the means for:

- (a) establishing a communication between said
customer's bank's computer and a third computer
trusted by the merchant;
- (b) processing said confirmed order and payment
instruction to substantially comply with
protocol required by same said third computer
for further processing of payment transaction;
- (c) transmitting said processed confirmed order and
payment instruction from customer's bank's
computer to same said third computer;
- (d) establishing a communication between said third
computer and said merchant's computer;
- (e) transmitting said processed confirmed order and
payment instruction from said third computer to
said merchant's computer; and





(f) performing further ancillary processing on said confirmed order and payment instruction for said merchant.

42. The apparatus as recited in claim 0, including the means for utilising an encryption and a decryption algorithm whether before or after transmission to encrypt and decrypt one or more messages comprising said confirmed order and payment instruction for one or more of said merchants from said customer's bank's computer to said merchant bank computer.

43. The apparatus as recited in claim 0, including the means for utilising a gateway computer to facilitate communication by processing payment instructions between said merchant's computer and said third computer.

44. The apparatus as recited in claim 0, wherein said third computer is a merchant bank computer operated by a bank or financial institution with which said merchant establishes an account and which





also processes said confirmed order and payment instructions on said merchant's account.

45. The apparatus as recited in claim 0, wherein said third computer is operated by a bank or a financial institution that acquires said customer payment authorisation instructions for credit cards or debit cards for and on behalf of said merchant's account.

46. The apparatus as recited in claim 0, further comprising reversing one or more previous confirmed order instructions, payment authorisation instructions and transaction information instructions.

47. A computer program or a series of computer programs embodied on computer-readable medium for initiating and conducting secure electronic transactions between a customer's computer, one or more merchants' computers belonging to one or more merchants and a customer's bank's computer operated by one or more customer banks, connected to each other by one or more communications channels for





transmitting and receiving a transaction information instruction and a payment authorisation instruction, comprising code segments for:

- (a) establishing a communication between said customer's computer and said merchant's computer via a communications channel;
- (b) receiving at said customer's computer information about goods or services from one or more said merchants' computers;
- (c) assembling at said customer's computer raw transaction information about one or more said goods or services selected or ordered by said customer from one or more of said merchants' computers;
- (d) processing said raw transaction information at said customer's computer, to produce a transaction information instruction in relation to one or more of said merchants' computers;
- (e) selecting from said customer's computer a said customer's bank to which customer will issue said transaction information instruction and





issue the corresponding payment authorisation instruction on behalf of the customer;

- (f) establishing a communication between said customer's computer and said merchant's computer via a communications channel;
- (g) transmitting said transaction information instruction and said payment authorisation instruction for one or more of said merchant from said customer's computer to said customer's bank's computer;
- (h) processing said transaction information instruction and payment authorisation instruction for one or more of said merchants at said customer's bank's computer, to produce a confirmed order and payment instruction for each said merchant, wherein said confirmed order and payment instruction to said merchant only contains such information from said customer's payment authorisation instruction as is necessary and required for said merchant to process said transaction for said goods and





services and/or deliver the said goods and services and does not contain information in said customer's payment authorisation instruction that is considered confidential or private to said customer.

- (i) processing said confirmed order and payment instruction to substantially comply with the protocol used by said merchant's computer for further processing of the transaction;
- (j) establishing a communication between said customer's bank's computer and said merchant's computer via said communications channel;
- (k) transmitting said processed confirmed order and payment instruction from said customer's bank's computer to said merchant's computer;
- (l) processing the confirmed order and payment instruction at said merchant's computer;
- (m) perform further ancillary transaction processing on said transaction information instruction and payment authorisation instruction for said customer; and





(n) performing further ancillary payment processing on said confirmed order and payment instruction and said payment authorisation instruction for said merchant.

48. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for collating the raw transaction information into a database for purposes of assembling and processing said raw transaction information.

49. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for utilising the Internet to establish a communication between said customer's computer and said merchant's computer.

50. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for utilising the Internet to establish a communication





between said customer's computer and said customer's bank's computer.

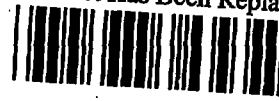
51. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for utilising the Internet to establish a communication between said customer's bank's computer and said merchant's computer.

52. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for utilising a telephone, a leased line or a private channel to establish a communication between said customer's computer and said customer's bank's computer.

53. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for utilising a telephone, a leased line or a private channel to establish a communication between said



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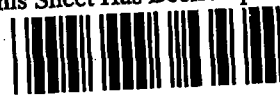
customer's bank's computer and said merchant's computer.

54. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for utilising an encryption and a decryption algorithm whether before or after transmission to encrypt and decrypt one or more messages comprising said transaction information instruction and said payment authorisation instruction for one or more of said merchants from said customer's computer to said customer's bank's computer.

55. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for utilising an encryption and a decryption algorithm whether before or after transmission to encrypt and decrypt one or more messages comprising said confirmed order and payment instruction for one or more of said merchants from said customer's bank's computer to said merchant's computer.



* C L M S *



56. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for transmitting authentication information and authentication instruction from said customer's bank's computer to a certification authority computer, and from said customer's computer to said certification authority computer, to authenticate the identities of said customer or said customer bank or both said customer and said customer bank and to authenticate said transaction information instruction or payment authorisation instruction or both transaction information instruction and payment authorisation instruction from said customer's computer to said customer's bank's computer before processing of said transaction information instruction or payment authorisation instruction or both transaction information instruction and payment authorisation instruction.

57. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for





utilising authentication mechanisms such as login identities or passwords or one or more electronic signatures of said customer or said customer bank or both said customer and said customer bank to authenticate the identities of said customer or said customer bank or both said customer and said customer bank and to authenticate said transaction information instruction or payment authorisation instruction or both transaction information instruction and payment authorisation instruction from said customer's computer to said customer's bank's computer before processing of said transaction information instruction or payment authorisation instruction or both transaction information instruction and payment authorisation instruction.

58. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for transmitting authentication information and authentication instruction from said customer's bank's computer to a certification authority





computer, and from said merchant's computer to said certification authority computer, to authenticate the identities of said customer bank or said merchant or both said customer bank and said merchant and to authenticate said confirmed order and payment instruction from said customer's bank's computer to said merchant's computer before processing of said confirmed order and payment instruction.

59. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for utilising authentication mechanisms such as login identities or passwords or one or more electronic signatures of said customer bank or said merchant or both said customer bank and said merchant to authenticate the identities of said customer bank or said merchant or both said customer bank and said merchant and to authenticate said confirmed order and payment instruction from said customer's bank's computer to said merchant's computer before





processing of said confirmed order and payment instruction.

60. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, wherein said customer's bank is a bank or a financial institution that has issued a credit or debit payment card to the customer and will confirm payment made using said customer's said credit or debit payment card upon receiving said customer's payment authorisation instruction in accordance with said customer's bank's rules and regulations.

61. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, including a code segment for utilising a gateway computer to facilitate communication by processing payment instructions between said customer's computer and said merchant's computer.

62. A computer program or a series of computer programs embodied on computer-readable medium as





recited in claim 47, including a code segment for utilising a gateway computer to facilitate communication by processing payment instructions between said merchant's computer and said merchant's computer.

63. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, further comprising reversing one or more previous confirmed order and payment instructions, payment authorisation instructions and transaction information instructions.

64. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 47, further comprising code segments for:

- (a) establishing a communication between said customer's bank's computer and a third computer trusted by the merchant;
- (b) processing said confirmed order and payment instruction to substantially comply with





protocol required by same said third computer for further processing of payment transaction;

- (c) transmitting said processed confirmed order and payment instruction from customer's bank's computer to same said third computer;
- (d) establishing a communication between said third computer and said merchant's computer;
- (e) transmitting said processed confirmed order and payment instruction from said third computer to said merchant's computer; and
- (f) performing further ancillary processing on said confirmed order and payment instruction for said merchant.

65. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 64, including a code segment for utilising an encryption and a decryption algorithm whether before or after transmission to encrypt and decrypt one or more messages comprising said confirmed order and payment instruction for one or





more of said merchants from said customer's bank's computer to said merchant bank computer.

66. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 64, including a code segment for utilising a gateway computer to facilitate communication by processing payment instructions between said merchant's computer and said third computer.

67. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 64, wherein said third computer is a merchant bank computer operated by a bank or financial institution with which said merchant establishes an account and which also processes said confirmed order and payment instructions on said merchant's account.

68. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 64, wherein said third computer is operated by a bank or a financial institution that





acquires said customer payment authorisation instructions for credit cards or debit cards for and on behalf of said merchant's account.

69. A computer program or a series of computer programs embodied on computer-readable medium as recited in claim 64, further comprising reversing one or more previous confirmed order instructions, payment authorisation instructions and transaction information instructions.

