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ELECTRONIC PAYMENT SYSTEM

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CASE STUDY

TRADECARD: BUILDING A GLOBAL TRADING ELECTRONIC PAYMENT SYSTEM

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ABSTRACT

In an attempt to provide an on-line payment mechanism for large-dollar cross-border transactions, TradeCard Inc. developed the world's first and only "credit card" for international trade. This case study discusses the major issues surrounding the viability of such a B2B electronic payment architecture. How would TradeCard provide a seamless and secure on-line settlement transaction? Is its platform capable of synchronizing all the databases involved in international transactions yet allowing all companies to use their own tools, operating systems and hardware platforms? How would TradeCard aggregate the disparate services offered by the network of companies involved in international trade? Would it change the mindset of global traders so that they would use its services rather than the traditional off-line settlement methods? The case discusses the critical issues involved in creating an international electronic payment system for cross-border transactions; the impact of new on-line alternative payment mechanisms on international trade payment environment; the systems security

requirements for safe electronic payments for B2B e-commerce; and TradeCard's business plan and marketing strategy in building a global e-commerce trading system.

Keywords: electronic commerce, global trade industry, electronic payments, security solutions, marketing

I. INTRODUCTION

While the Internet is enabling millions of businesses worldwide to buy and sell in ways never before imagined, the tools and methods used to conduct trade have gone unchanged for several hundred years and do not fit into the world of electronic commerce (e-commerce). TradeCard represents a new payment alternative for international trade.
- Kurt Cavano, TradeCard Inc., Chairman and CEO
  [TradeCard, 1999b.]

TradeCard (www.tradecard.com) is a business-to-business e-commerce transaction enabler that focuses on cross-border trade. It is conceived as a new payment alternative for international trade that provides a solution that is easier to use than a letter of credit, more secure than open accounts, and available for one flat fee per settled transaction.

TradeCard is designed to provide an on-line payment mechanism for large-dollar cross-border transactions. TradeCard's aims are:

1. to increase the volume of cross-border trade and lower the cost of transactions.
2. to become both an alternative on-line payment mechanism for existing international trade.

To implement TradeCard successfully, however, requires that the technical infrastructure be able to provide a seamless on-line settlement transaction and a secure electronic solution involving a network of global firms. Would the TradeCard platform be able to synchronize all the databases involved

in international transactions on an open Internet standard that allows all parties to use their own tools, operating systems and hardware platforms? How would TradeCard integrate an on-line payment mechanism to B2B hubs and be an accepted trade settlement tool amongst buyers and sellers?

To be successful, TradeCard, Inc., the company, must build a network of firms in international trade and aggregate the disparate services necessary for international trade onto the TradeCard system. Without the participation of the traditional trade services providers, TradeCard would not be able to gather information that would facilitate future transactions, and TradeCard members could not deal with traders who were non-TradeCard members. What is the best means of getting traders and trade services providers to sign on and become TradeCard members? How would TradeCard change the mindset of global traders who conduct large-dollar transactions to use TradeCard rather than the traditional off-line settlement methods such as through banks?

II. THE INTERNATIONAL TRADE PAYMENT ENVIRONMENT

The methods used to conduct international trade remained unchanged for several hundred years. International trade is still complex, paper-based and labor-intensive. The greatest obstacle to trade is the high cost of financing for small and medium-sized traders. The three payment methods for international trade (letters of credit, document collection, and open account (see Sidebar 1)) involve risks and costs. Table 1 summarizes the average costs of settlement processes. The table shows that the fees associated with doing business with letters of credit are prohibitively high for some smaller transactions.

For those unfamiliar with international trading terminology, Appendix I presents a glossary of terms.

Sidebar 1. Traditional Trade Settlement Methods

- *Letters of Credit* – one of the most common methods of making international payments because they reduce the risks in the transaction. According to the Boston Consulting Group, businesses involved in international trade spend about US$420 billion each year on administrative costs, mainly on document handling and transmissions related to trade transportation (TradeCard, 2000a).

- *Documentary Collection* – banks act in a fiduciary capacity and ensure that payment is received. However, the banks are liable only for the correct execution of the collection instructions, but are not committed to paying the seller/exporter themselves should the buyer/importer default on its financial obligation.

- *Open Account* – credit extended that is not supported by a note, mortgage, or other formal written evidence of indebtedness. This method poses a risk to the supplier because the buyer's integrity is essential.

Other secondary methods available include:

- *Credit Insurance* – offered to exporters who are seeking protection against commercial and political risks, often layered on top of an open account transaction.

- *Credit cards* – created for businesses in the form of purchasing cards, but limited in their ability to purchase large-dollar items.

- *Escrow* – a method used as an intermediary device during the transfer of and payment for goods.

- *Checks* – similar to open accounts without the immediate availability of funds provided by electronic funds transfer.

<p style="text-align: center;">Table 1. Average Cost of Selected Financial Settlement Processes</p>

	Letters of Credit	Documentary Collection	Open Account With Credit Insurance	Open Account without Credit Insurance
Per cent of International Trade	20%	10%	35%	35%
Characteristics	• Paper-based transaction • Compliance based on stringent documentation requirements • Credit risk is assumed by a bank	• Paper-based transaction • Compliance based on buyer's acceptance of goods, bank facilities transfer of documents only • High amount of risk is assumed by the seller	• Paper-based transaction based on trust • Compliance based on buyer's acceptance of goods • Insurance mitigates risk but coverage limitations may exist	• Paper-based transactions based on trust • Compliance based on buyer's acceptance of goods • Unsecured extension of credit
Average Fees Paid by Buyer & Seller[1]	$1,000 - $1,500	$250 - $500	$50 - $200 plus variable cost of premium	$50 - $200
Payment Guarantee	Full, if documents are in compliance	None	Full, but may have coverage limitations	None
Compliance Check	• Time-consuming • Done by bank	• Time-consuming • Done by buyer	• Simple procedures • Done by buyer	• Simple procedures • Done by buyer

[1] *Based on an average international trade transaction for manufactured goods of US$50,000*
As of August 2000

TRADECARD'S COMPETITORS

No other company offered the same kind of services as TradeCard. However, TradeCard is often compared with Bolero Ltd., a joint development of the Through Transport Club and the Society for Worldwide Interbank Financial Telecommunication, or SWIFT, which tested an electronic registry for global trade. The Bolero system is like a repository for Letters of Credit. The system is used mainly for bulk shipments of commodities, such as crude oil, in which market participants could trade their positions in a cargo several times during a voyage [Platt, 1997].

III. TRADECARD, INC.: THE COMPANY

HISTORY

The World Trade Centers Association (WTCA) in its New York office, headed by its president, Guy Tozzoli, formulated the TradeCard concept in 1994 to help international traders, particularly small and medium-sized companies, automate their transactions. In that year, Tozzoli established the Full Service Trade System (FSTS) as the company that developed and operated the TradeCard product.   General Electric Information Services, American Management Systems, and General Electric Capital were among the 80 shareholders in the firm.

Dubbed as the first "credit card" for international trade, the TradeCard system empowered small and medium-sized companies to compete with the bigger firms. It is the world's first and only e-commerce service that contains all the three "C's" of an international trade transaction: credit, connectivity and compliance:

- *Credit* – TradeCard provides a line of credit from an internationally recognized funder to the importer (buyer) that guarantees payment to the exporter (seller).

- *Connectivity* – The TradeCard system provides a seamless computer trail from the origin of the goods through the freight forwarder through customs, through domestic transportation and/or redistribution to the end user; it integrates completely the international and domestic parts of a trade transaction.

- *Compliance* – Patented software guarantees verification of all the terms of the electronic contract by automatically matching all parts of a formatted electronic purchase order, called a "purchase order pro forma invoice".

TradeCard started with a series of private tests with interested companies in the United States between 1996 and 1998. The first pilot was carried out in 1998 with a US importer. TradeCard's strategy then was "to start small, but start successful" [Jones, 1998].

WARBURG PINCUS TAKEOVER OF FSTS

TradeCard did not get off the ground until February 1999, when the private equity investment firm of E. M. Warburg Pincus & Co., LLC, the biggest private fund management company on the US East Coast, saw the potential in the TradeCard system and committed up to US$53 million capital in TradeCard. TradeCard, Inc. became an independent company with Warburg Pincus as the major shareholder. A new management team was brought in, composed of aggressive and experienced banking, international trade, and technology professionals from different backgrounds. The new team immediately introduced TradeCard. With the TradeCard system, a trade could be made and paid at the same time, and a transaction could be completed. Moreover, TradeCard targets importers and exporters that deal in finished goods, such as toys, electronics and clothing. *Future Banker* magazine named TradeCard as one of the "Top 25 Technology Deals of the Year" in 1999. Cary Davis, Warburg Pincus Managing Director, said:

> *We seek opportunities to invest in companies that have unique products or services, technological superiority, unusually talented management and the potential for significant growth. We certainly see those factors in TradeCard* [Platt, 1999b].

TRADECARD'S ORGANIZATIONAL STRUCTURE

By March 2000, TradeCard had increased its total workforce in its New York office from 20 to 80. One of its management challenges was the weekly growth of its workforce. TradeCard however maintained a flat organizational structure (Figure 1) that involved the following departments:

- *Marketing* – management of advertising, public relations and direct marketing of the TradeCard service
- *Technology* – implementation of business specifications into the technology system
- *Alliance Management* – management of customers and network alliances
- *Business Development* – supervision of sales and servicing to the right customers

- *Operations* – management of Member and Application Services, Client Management, Training and Product Quality Assurance
- *Product Management* – development and direction of TradeCard's Compliance and Financial Settlement application
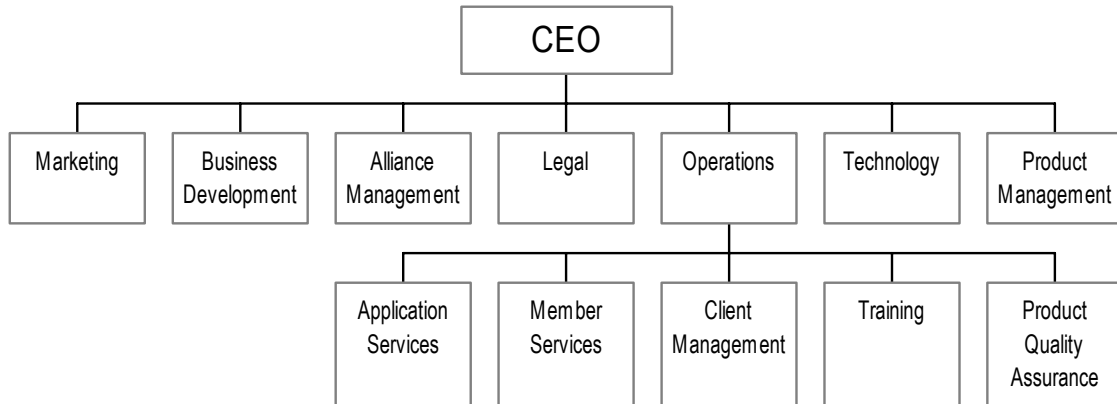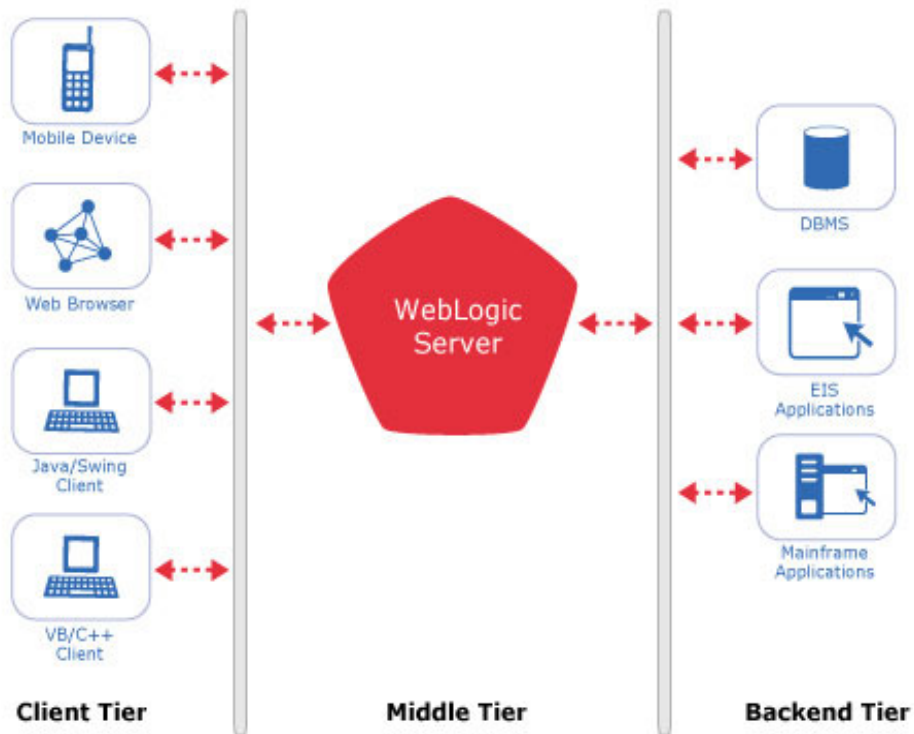

Figure 1. TradeCard Organizational Structure

IV. TRADECARD TECHNICAL ARCHITECTURE

TradeCard is built on an Enterprise Java Beans-based architecture and all application code is Java. The technical architecture is shown in Figure 2 and described in more detail in Appendix II.

Figure 2: Weblogic Server Architecture

Sidebar 2 describes the capabilities obtained by Tradecard system from the technical architecture.

TRADECARD SYSTEMS SECURITY

To minimize transaction risks for all parties and provide a secure and responsible environment so members have the proper assurances to conduct their affairs, authentication and validation are provided during registration by Coface and Thomas Cook. These firms are alliance partners in the TradeCardnetwork (Sidebar 3 and Appendix V). Through its privacy and confidentiality policies (Appendix III) TradeCard provides assurance that data provided to TradeCard by the buyer and the seller remains private and secure.

Sidebar 2: TradeCard: The System

TradeCard is an Internet application that provides the technology that enable full transaction capability. Its capabilities include:

- Integration of multiple data formats within a single transaction
- Digital signatures on all documents, which could enable trust between global parties
- Managed global transactions between multiple parties with automatic workflow and alerts
- Single-point tracking and reporting on all transactions
- 24x7 global real-time data access
- Open Internet standards that allow all parties to use their own tools, operating systems and hardware platforms

The system was fully implemented by October 2001.

Sidebar 3: TradeCard's Alliance with Coface and Thomas Cook

Coface, the world's largest export credit insurer, and TradeCard created an alliance that offers a guarantee of payment for e-commerce B2B international transactions. Coface is known for its ability to provide credit ratings and cross-border credit insurance; its @rating product is a worldwide trade-debt rating application designed for international trade.

Thomas Cook serves as the "money mover" for TradeCard. The agreement between the two companies allows buyers and sellers who would transact with TradeCard to maintain their individual bank relationships. Thomas Cook provides global payment and foreign exchange functions to buyers and sellers using the TradeCard network, and conveys funds between the banks of the parties to a trade.

TRADECARD'S SECURITY FOR VISITORS TO THE WEBSITE

When a user visits www.tradecard.com, TradeCard does not collect personally identifiable information except when the user specifically and knowingly provides it. For example, if a user requests information from TradeCard, the user will be asked to provide basic contact information, including name, company, title, country, and e-mail address. Any additional information, such as industry and average transaction size, is provided on a purely voluntary basis.

TradeCard claims it will never sell, trade, or rent to any third party any personally identifiable information; the information provided by the user will be used to respond to a user's requests for additional information and for inclusion in future mailing initiatives. Users can opt-out of receiving future mailing.

TradeCard's corporate Web site does not use cookies, or small text files placed on a user's browser. The system, however, logs some basic and generic information about a user's computer, including its:

- IP address (computer's unique signature)
- Operating system (e.g., Windows NT)
- Browser software (e.g., Netscape Navigator)

TradeCard uses this information about the user's computer to perform routine maintenance for its own Web site and to generate aggregate Web site traffic reports.

TRADECARD'S SECURITY POLICIES FOR TRADECARD MEMBERS

To apply for membership in the TradeCard global e-commerce network, prospects are asked to provide detailed personal and business information. This information is shared with TradeCard's credit risk provider and payment agent to enable a company to qualify for credit risk and payment services. During this registration process, applications are allowed to choose whether or not they would like TradeCard to contact their trading partners for membership and other services related to transactions.

Once a firm becomes a member, the member's personally identifiable information, confidential business data, and transaction details are shared with other members *participating in their transactions* and with TradeCard's alliance partners. TradeCard does not disclose personally identifiable information, confidential business data, or transaction details to parties outside of the TradeCard network without the user's consent.

When a member logs onto the transaction site TradeCard uses "session cookies", small text files placed temporarily on a user's browser, to maintain user session records. These cookies are destroyed as soon as a member logs out and closes the browser and cannot be used to track other information about the member or the member's computer. Cookies are required; a member cannot use TradeCard unless a member accepts these session cookies.

TradeCard is aware that in conducting global transactions, security is a critical issue. Thus, aside from the stringent application procedure and registration done through Coface and Thomas Cook, TradeCard built three security levels into the architecture of the system: server authentication, 2-factor user authentication and digital signatures (Figure 3).
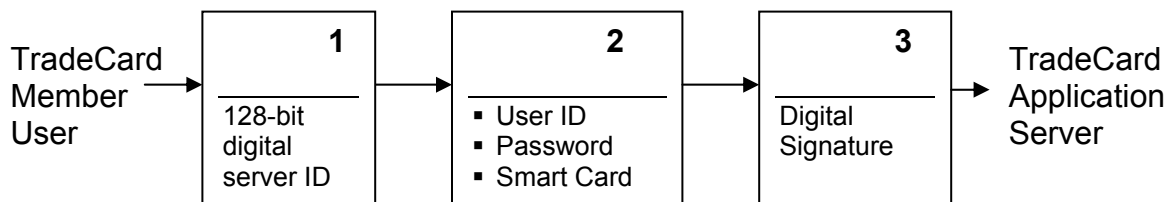

Figure 3. TradeCard Security Levels

Additional details about TradeCard's security are given in Appendices III and IV.

V. HOW TRADECARD WORKS

TradeCard's global e-commerce trade settlement network is described by the firm as follows:

> *When a buyer and seller agree to transact, the TradeCard system allows them to negotiate contract terms and conditions on-line.*

Once a transaction is established in electronic form with both parties in agreement, the seller will formally approve the terms of the purchasing contract. Each purchase order is then attached with an assurance of payment through Coface and their @rating service ensuring that the seller will receive payment upon receipt of goods. When the goods are shipped, TradeCard's patented compliance engine compares the shipping information with the purchase order. If the terms are met, the payment is made automatically. The buyer gets its goods and the seller gets its money. [TradeCard, 2000b]

Based on the process flow of transactions, TradeCard acquired a patent for the TradeCard solution. Filed on 13 October 1994 by Guy Frederick Tozzoli and Christopher James Lynch as inventors, a U.S. patent (patent number 5,717,989) was issued on 10 February 1998. A Taiwanese patent was granted in January, 2000 (patent number 107368). The patent is pending in European Union, Canada, and Singapore. The patent describes TradeCard as a system that stores criteria specified by a funder relating to trade transactions for buyers and sellers. The system compares the criteria with a proposed purchase order (PO) to determine whether the system could generate a payment guarantee on behalf of the funder for the buyer to the seller. The system also compares subsequent PO documentation with the original PO to ensure that the terms of the PO are properly fulfilled (Figure 4).

TRADECARD INTERNET DOCUMENT WORKFLOW

TradeCard controls all the business transactions created by the TradeCard system through the TradeCard Workflow Processor. The Processor manages all business documents that are organized into sets of folders and contracts. When an action is required against a document, all the parties involved are alerted automatically.

The TradeCard Process
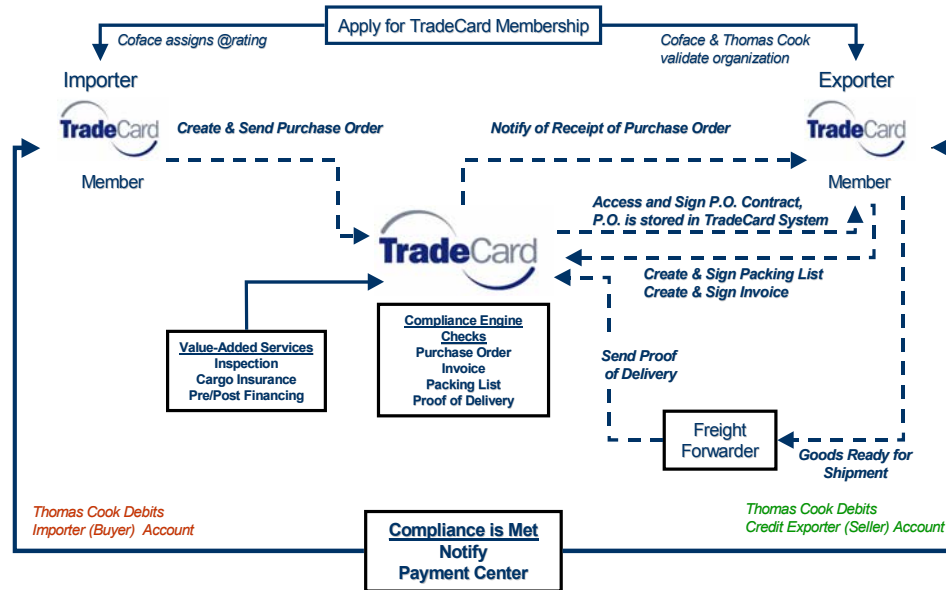### Enabling Global Transactions

www.tradecard.com

Figure 4: The TradeCard Process

TRADECARD'S E-VALUE CHAIN

The traditional model of the trading process between buyer and seller involves the following steps:

- *Discovery* – seller displays goods and buyer selects the goods to purchase
- *Negotiation* – buyer and seller negotiate a price and buyer formally confirms the order
- *Ordering* – buyer and seller agree to transact
- *Fulfillment* – movement of goods from buyer to seller
- *Compliance* – documents are checked against one another
- *Settlement* – buyer pays and seller receives the payment

B2B trading sites, or on-line marketplaces, predominantly offer the first three processes, Discovery, Negotiation and Ordering; the last three processes require dropping off-line. TradeCard provides the financial link that completes

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the value chain on-line. Figure 5 shows the e-value chain and Sidebar 4 describes the documents used.

Stages of the Trading Process   **Procedures Involved & Documents Required**

DISCOVERY — Seller displays products through catalogs or through on-line market places.

NEGOTIATION — Buyer and seller negotiate contract terms and buyer formally confirms the order. Buyer also participates in auctions on-line.

TradeCard services In the trading process

ORDERING — Buyer and seller agree to transact business and buyer orders goods for purchase. Documents required: *Purchase Order* and *Logistics Detail.*

FULFILLMENT — Goods are moved from buyer to seller. Documents required in TradeCard: *Commercial Invoice, Packing List, Certificate of Inspection* and *Forwarder's Cargo Receipt*.

COMPLIANCE — Data between core procurement and fulfillment documents are matched and validated using TradeCard's compliance engine.

SETTLEMENT — Buyer pays the seller for the goods electronically and seller receives *Assurance of Payment*. TradeCard sends a payment notice to both the buyer and seller that payment has been made.
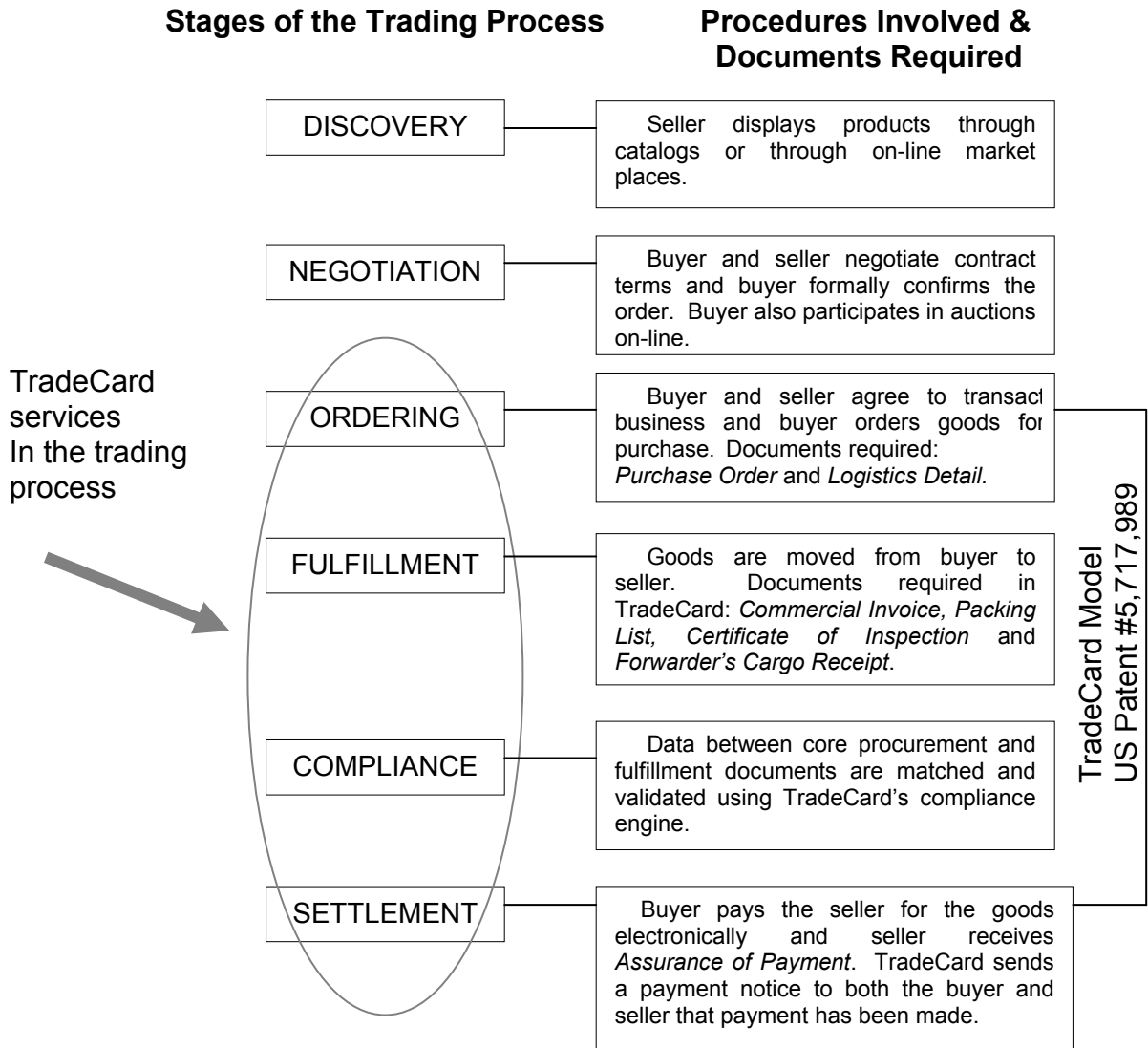
TradeCard Model
US Patent #5,717,989

Figure 5: TradeCard E-Value Chain

Sidebar 4: Documents in the Tradecard Value Chain

Purchase Order (PO) – a required document that establishes the terms of an order by listing the quantity, type, and price of goods to be purchased

Logistics Detail – a required document that defines the shipping terms and conditions for a Purchase Order

Certificate of Inspection – a certificate attesting to the specifications of goods shipped, required by some purchasers and countries; may also be referred to as an Inspection Certificate

Forwarder's Cargo Receipt – proof of delivery document

Assurance of Payment – provided to the seller by the Coface Group for the amount of the invoice up to the buyer's @rating limit in case the buyer defaults on payment. This assurance of payment applies only to TradeCard transactions that are fully compliant to the terms and conditions of the purchase order between a specified buyer and seller within a given time frame.

TradeCard uses the International Chamber of Commerce (ICC) rule as its standard in the documentation process. It is similar to a Letter of Credit with an ICC stamp, but does not replicate everything. For example, TradeCard does not create the bill of lading or any other cargo documents; the freight forwarder notifies TradeCard that they prepared the documents.

BECOMING A TRADECARD MEMBER

All the network users and partners in the trading process must be part of the TradeCard network to enable transactions to be conducted on-line. To become an approved member of the TradeCard network, users must complete an on-line application that TradeCard and its two core partners (Thomas Cook and Coface (Sidebar 3 and Appendix V)) evaluate. This registration procedure checks the credit ratings and the financial background of the company or user making the application. The process is similar to applying for a credit card.

Applicants provide detailed information for TradeCard to verify the company credentials and the user involved. The process normally takes about two weeks.

COSTS OF USING TRADECARD

Fees involved in the TradeCard system include an annual membership fee of US$250 per company, and a flat fee of US$150 per settled transaction for transactions between US$10,000 and US$100,000. In the TradeCard system, the seller normally pays the transaction fee, but TradeCard is designed so that this liability can be negotiated and apportioned between the buyer and seller. With the US$150 fee TradeCard members get value-added services including:

- Access to third-party services such as logistics, inspection, cargo insurance, money movement, payment assurance, and banks
- Transaction security for all parties
- Assurance of payment to the seller
- Electronic movement of funds
- 24x7 real-time access to accurate transactions

The US$150 fee was about one tenth of the cost of a Letter of Credit per transaction in the year 2000. According to Michael Klausner, TradeCard Vice President for Marketing, the average shipment of finished goods such as toys or electronics, based on U.S. government statistics, is about US$43,000 per transaction and the fee to use a Letter of Credit on a US$43,000 transaction is from US$1,000 to US$1,500, usually paid by the seller.

VI. IMPLEMENTATION ISSUES

IMPLEMENTATION PROBLEMS FROM 1994 TO 1998

The new management team that was put in place in 1999 identified three major issues that hampered the full implementation of the TradeCard system from 1994 to 1998:

- the technical system, specifically data synchronization;
- marketing strategy; and

- the business model.

Data Synchronization

FSTS developed TradeCard as a distributed data system. A Windows-based software application, it had to be installed in every single PC at all locations and synchronized to enable traders to transact on-line and incorporate electronic compliance. A single transaction between a buyer and a seller using the system was a massive effort because it involved linking up all trading parties involved and synchronizing the database. Data were often difficult to access and out-of-date. Logistically it was impractical to use the system when the users involved were in countries where TradeCard was not available, because the software had to be physically installed in the PC.

Marketing Strategy

Because TradeCard's strategy was "to start small, but start successful", the companies involved in the first transactions were small and medium-sized companies. The first transactions were carried out on 30 April 1998, involving a US-based importer, Avalon Products, importing US$21,600 worth of baby strollers from a Taipei-based manufacturer, Most-Brite. The transactions also involved participation of the following:

- NationsBank's Atlanta office granted credit for the transactions, and Most-Brite's account at Standard Chartered Bank in Taipei received payment
- Best Freight International of Hong Kong provided freight forwarding services
- GE Information Services' global network assisted with installation and technical support

Since TradeCard is targeting companies in the global trade industry, focusing on small and medium-sized companies, this pilot test was appropriate. However, marketing to companies at this level turned out not to help build trust and credibility for TradeCard in the marketplace.

Business Model

"TradeCard unsuccessfully tried to set up a business model that included banks" [Avivah Litan of the Gartner Group as quoted in Marjanovic, 1999]. Although owned and developed by private companies, TradeCard is marketed by banks and they are allowed to focus on providing financing services and access to a payment network. The trade finance business is dominated largely by a relatively small number of banks that are reluctant to share their economies of scale. In the US, for example, the 10 largest trade finance banks account for 75 per cent of the Letters of Credit [Platt, 1999a]. The advent of e-commerce global payments and electronic authentication threatens to dilute the Letter of Credit revenue stream banks now enjoy. The TradeCard system could eliminate documentary handling fees paid to banks by automating the compliance scrutiny of Letter of Credit transactions.

IMPROVEMENTS IMPLEMENTED IN 1999 AND 2000

Realizing the three key issues in implementation from 1994 to 1998, the management team started working to address these issues in February 1999.

A New System Built on the Internet

The new management changed the whole medium of providing electronic settlement services by abandoning the client-server system to develop an entirely new system on the Internet. TradeCard Inc. built the new TradeCard system around the old client service system model on an Internet-based system that allowed the buyers, sellers and the network partners to access one application through a Web browser based on the HTTP and HTML protocols.

All types of business documents are stored internally in the TradeCard system as XML; although TradeCard customers are not required to have XML-compliant interfaces on their systems. For example, a seller can upload an invoice from an automated supply chain system directly into the TradeCard system, the buyer can view the invoice in HTML via a Web browser, and a freight forwarder can send the advance shipping notice in EDI format.

TradeCard developed a standard XML-based schema that is published for every service provider to use. This standard has been available since November 1999 when TradeCard first began settling transactions across the network. In special circumstances, TradeCard provides translation services for standard industry accepted formats into its own schema. In countries where paper documents are still required, these documents could be faxed to the TradeCard system. The documents would then be stored as images accessible via a Web browser. This service allows businesses with paper-based requirements to participate in TradeCard transactions.

Marketing Strategy: Build Alliances with Best-of-Breed International Trade Service Providers

To change traditional trading practices globally, TradeCard has to build its brand, establish trust, and implement the concept of trust by association. TradeCard is now building trust and credibility in the marketplace by developing alliances with best-of-breed companies instead of small and medium-sized companies. With the support of the World Trade Centers Association, General Electric, and Marsh & McLennan Cos. (an insurance brokerage and consultant), TradeCard is also building alliances with companies involved in international trade. A list of these companies is shown in Sidebar 5.

TradeCard's New York office deals primarily with the North American companies that are buyers and whose trade counterparts are predominantly located in Asia. Therefore, TradeCard's plan for expansion is to start in the Asia-Pacific region. The business coverage of the initial rollout looks at four countries concurrently: Hong Kong, Taiwan, Singapore, and South Korea. Hong Kong is the location of the first physical office established, and it serves as the regional headquarters that will look after the TradeCard offices in the other Asian countries. TradeCard's target is to secure 100 exporters who would sign up with TradeCard within the first quarter of 2000. By September 2001, TradeCard had over 200 companies signed on as members. Overall, TradeCard aims to have 2,000 users conducting at least one transaction in the system. TradeCard expects to expand services in China, Western Europe, and Latin America. Its

sales office in Europe plans to begin transactions in first quarter of 2002. In October 2001, TradeCard launched in Brazil. The business approach is the same in all countries: to forge alliances with established local trading companies or institutions that developed strong links with the local community. These alliances serve as TradeCard's main sales force on the ground. Marketing of the TradeCard service is through:

1. Referrals from the core group of invited customers or early adopters who had used TradeCard. If they are buyers, TradeCard requests a listing of their major sellers and consequently TradeCard conducts a direct

marketing approach to their referrals.

2. Companies and institutions such as Tradelink in Hong Kong that understand trading practices and have an established database of traders. TradeCard works with Tradelink and comes up with a direct marketing program to promote TradeCard as a new international trade settlement tool to the Hong Kong trading community.

A public relations and direct marketing firm, Ogilvy, works with TradeCard to create the TradeCard brand image and disseminate the service to each region or country where TradeCard is to be launched commercially. Ogilvy prepares all the marketing promotion material and documentation necessary to launch the service in the region.

In March 2000, TradeCard Inc. in co-operation with Tradelink introduced the TradeCard system to members of the Tradelink trading community. On 28 March 2000, TradeCard announced its worldwide service launch in Hong Kong.

TradeCard is able to maintain its original strategy goals of creating awareness in target markets and using key customers as levers for attracting new members, and it continues to rely upon partner support and distribution channels such as banks to acquire customers. In 2001, the only area that may have changed is its reliance on B2B marketplaces. TradeCard is now focusing on signing up trading pairs who are expanding the network effect of the system.

ISSUES AND CHALLENGES

Network of International Firms

TradeCard needs to gather information from the traditional trade providers to facilitate future transactions. TradeCard must decide on how to build up the network of firms in international trade to incorporate TradeCard members. This requirement means approaching traditional providers of trade such as:

- logistics providers,
- credit and financial providers,
- inspection providers, and

- other trade service providers

Building the network of firms in the TradeCard system is crucial because the network overcomes geographical limitations in using TradeCard. As of September 2001, use of the TradeCard system was only possible in countries such as the US, Canada, Hong Kong, Taiwan, Singapore, Korea, and Japan. For example, if traders in Hong Kong wanted to do business with mainland China, TradeCard was not in a position to do so, because they had not established the appropriate facilities in China due to capacity issues and some regulatory issues that are out of their control.

Negative Perception Associated with Electronic Transactions

TradeCard's aim was to change the traders' approach to trade. To do so, TradeCard had to consider the needs and expectations of international traders. Traders accepted the concept and the idea of B2B e-commerce, but were unsure of the appropriate next step for payments and making sure that payments are secure. Banks traditionally provided a secure method of facilitating large transactions across international borders. When TradeCard approached the banks, the banking community initially was apprehensive because they perceived the TradeCard system as a threat to their Letter of Credit business. Moreover, buyers and sellers usually had accounts in different banks and were concerned that they would have to change their account relationships.

The three levels of security (Section IV) built into the TradeCard system were considered sufficient to create payment securely. TradeCard's main concern was how to change the negative perception associated with conducting secure on-line transactions. Michael Klausner, TradeCard Vice President for Marketing, expressed their challenge as:

> *It's a marketing ploy to reach people and get them to sign up. We need buyers and sellers who are both members of the TradeCard network. This is quite similar to the credit card model where you need members who are cardholders and merchants who accept the card. But how do you get both sides of a transaction on the first day? Who will sign up first? We are in a similar situation right now to what the credit card companies must have faced when they first launched.*

Technical Infrastructure

In November 1999, TradeCard completed building its technological infrastructure, an "open box" of how everything works, that would seamlessly aggregate all the necessary disparate services in international trade. TradeCard also completed building its Customer Service Management System.[1] Its data center and a separate disaster recovery facility, became operational. Klausner said that speed and capacity were big issues for TradeCard. TradeCard provides a technology that enables firms to take their products and services global. However, doing business overseas brought an entirely new set of obstacles for e-businesses. Other intrinsic issues in global e-commerce that TradeCard had to consider included:

- the telecommunications infrastructure that would be able to accommodate all users and all types of data,
- updated standards to keep up with the changing laws associated with the Internet, and
- other technical and electronic transmissions standards.

VII. CONCLUSION

Tradecard envisioned its role as the missing link that would make it possible to complete an international e-commerce transaction in an efficient and cost-effective manner. In effect it was in a position to make an extremely positive contribution to the global economy by automating the international trade process. Members of the international trade community recognized the importance of shared infrastructures to the viability of global e-commerce. The key question Tradecard was facing was how best to devise a strategy that would surmount the

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[1] The Customer Relationship Management System is a web-based system designed by TradeCard that would follow the cycle of the transaction process. There would be one database into which all the departments in TradeCard could feed information. The departments would in turn have access to that data. For instance, in the acquisition of the customer, the Marketing department would have to input information to the system. When a marketing prospect become a customer, the customer's name and data would be passed on to Customer Service department so they too could monitor the transactions.

many problems surrounding the establishment of a shared global payment infrastructure.

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REFERENCES

EDITOR'S NOTE: The following reference list contains hyperlinks to World Wide Web pages. Readers who have the ability to access the Web directly from their word processor or are reading the paper on the Web, can gain direct access to these linked references. Readers are warned, however, that
1. These links existed as of date of publication but are not guaranteed to be working thereafter.
2. The contents of Web pages may change over time. Where version information is provided in the References, different versions may not contain the information or the conclusions preferred.
3. The author(s) of the Web pages, not AIS, is (are) responsible for the accuracy of their content.
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APPENDIX I
TRADING TERMINOLOGY

The following glossary defines some of the major types of transactions and documents used in trade finance.

Advance Payment: An agreement that payment be sent before goods are sent to the buyer (such an arrangement is typically made informally).

Bill of Lading: A transport document that details the contents of shipment, often in great detail. It functions as a receipt of goods, evidence of transport, and a document of ownership.

Documentary Collections: A formal contract where the ownership of goods is not transferred to the buyer until the seller receives certain documentation and payment. Documentary collections are often used when the two parties to the trade do not yet have a long-standing business relationship.

Two types of documentary collection are:

Documents against Payment, the bank releases the documents to the buyer/importer only against a cash payment in prescribed currency. In many cases, however, the title document has already been transferred, through supply chain mechanisms, making this protection meaningless.

Documents against Acceptance, the bank releases the documents to the buyer/importer against acceptance of a bill of exchange by the buyer guaranteeing payment at a later date by the buyer. Again, the title document is transferred prior to payment.

Document of Title: A document that gives the holder the right to possess certain assets.

Letter of Credit: A formal contract where the bank guarantees that the buyer of goods will pay the seller. Letters of credit are used when trading partners

might not yet have established trust. Letters of credit are more formally called documentary letters of credit because the banks handling the transaction deal in documents as opposed to goods. The terms and conditions listed in the credit all involve presentation of specific documents within a stated period of time, hence the formal name documentary credits. The documents the buyer requires in the credit may vary, but at a minimum include an invoice, packing list and a bill of lading. Other documents that the buyer may specify are certificate of origin, consular invoice, insurance certificate, inspection certificate and others.

Open Account (payment): An agreement that the buyer of goods will pay for them after they are received.

Waybill: A transport document that functions as a receipt for goods and evidence of transport, but not as a document of title.

APPENDIX II

DESCRIPTION OF TECHNICAL ARCHITECTURE

The technical architecture is shown in Figure 2 in the text. TradeCard has a rule-based architecture – Dynamic Business Logic – that allows the standards of a particular buyer/seller community to be defined once. All subsequent transactions within the community follow the predefined rules or standards. The rules manage the workflow of the transaction by determining the required documents, their routing, and compliance characteristics. Dynamic business rules can be created for specific individual parties, communities and regions.

The following is a list of the technical elements of each major component of the architecture:

- *Application Server* – The BEA WebLogic Enterprise Application Server is used to manage the Java-based components. This sessionless architecture enables each incoming request to be serviced as an independent event. This approach allows for automated failover at both the Web and business logic tiers, and provides linear scalability (Figure 3). Automated failover is the seamless rerouting of requests in the event of a failure in either the system or application.

- *Presentation Server* – The presentation server, a client of the application server, accepts and creates the HTML pages delivered to the user's browser. All the HTML pages are generated using Java Server Pages (JSP) technology.[2]

- *Message Queuing* – An IBM MQSeries[3] based eventing service provides asynchronous processing, which ensures that long running background tasks do not interfere with peak in-line usage patterns. MQSeries also manages the message queuing requirements of the Message Broker.

- *Rule Engine* – This custom software is at the heart of TradeCard's patented compliance engine. The TradeCard Rule Engine encapsulates all business rules, which allows the addition of custom products or business services without affecting the basic architecture of the system, and determines the workflow requirements of all transactions in the system.

- *Message Broker* – TradeCard's Messaging Infrastructure enables the Web browser and non-browser access to TradeCard, such that messages received from non-browser access are converted to TradeCard XML formats. Non-browser access could be achieved by messaging delivered in a variety of mediums, including SMTP, FTP, EDI and custom formats. SMTP or Simple Mail Transfer Protocol is a TCP/IP protocol used in sending and receiving e-mail; usually used with one of two other protocols, POP3 or Internet Message Access Protocol, which let the user save messages in a server mailbox and download them periodically. FTP or File Transfer Protocol is a standard Internet protocol and is the simplest way to exchange files between computers on the Internet; it is commonly used to transfer

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[2] JSP is a technology for controlling the content or appearance of web pages through the use of servlets, small programs that are specified in the Web page and run on the web server to modify the web page before it is sent to the user who requested it.

[3] An application often known as *business integration software* or middleware, whose components tie together other software applications.

Web page files from their creator to the computer that acts as their server for everyone on the Internet. Electronic Data Interchange is a standard format for exchanging business data.

APPENDIX III
TRADECARD PRIVACY & CONFIDENTIALITY POLICIES

Privacy and Confidentiality FAQs

1. What information does TradeCard collect about my business or me?

When you visit TradeCard's Web site, TradeCard will collect only the personally identifiable information or confidential business data that you specifically and knowingly provide. TradeCard's system will also log some basic and generic information about your computer, including its IP address, operating system, and browser software.

If you choose to apply for membership in the TradeCard global e-commerce network, you will be required to provide detailed personal and business information. Please review the section titled Required Application Information for more details on the application requirements as well as how your application data is used to qualify your company for TradeCard membership and for credit risk and payment services.

2. How does TradeCard use the information that I provide?

Data Collection	How Data is Used
Request for Information Form Join the TradeCard Network Form	-Respond to requests -Inclusion in future mailings (if you do not opt out)
IP Address Operating System Browser Software	-Conduct routine Web site maintenance -Develop and enhance our Web site
TradeCard Membership Application Form	-Qualify your company for TradeCard membership -Qualify your company for credit risk and payment services -Marketing and sales purposes (if you do not opt out) -Contact your trading partners (if you do not opt out) -Provide member support -Administrative purposes, i.e. service your account, troubleshoot, resolve disputes
Transaction Details	-Automate and streamline your international trade transaction by checking for electronic data compliance, providing reporting features, and transferring data from previous forms to those of the current transaction -Provide member support

3. Does TradeCard sell or share the information that I provide?

TradeCard will never sell, trade, or rent to any third party any personally identifiable information, confidential business data, and/or transaction details. Once you become a member of the TradeCard global e-commerce network your personally identifiable information, confidential business data, and transaction details will be shared with other members *participating in your transaction* as well as TradeCard's alliance partners. TradeCard's alliance partners include, but are not limited to, payment agents, credit risk providers, cargo insurance providers, country managers, freight forwarders, inspection agents, logistics providers, pre-and post-financing providers, and sales, support, and marketing agents. TradeCard will not disclose your personally identifiable information, confidential business data, or transaction details to parties outside of the TradeCard network without your consent.

4. Can I update the information that TradeCard has about my business or me?

TradeCard is committed to providing reasonable and practical access to you to identify and to correct any inaccuracies in the information you may provide. Visitors who have provided information on our Web site can contact TradeCard Member Services to correct any inaccuracies. TradeCard members can use the system's administrative function on the transaction Web site or contact TradeCard Member Services to maintain up to date account information.

5. What choices are available to me regarding the collection and use of the information that I provide?

Visitors to TradeCard's Web site who request additional information, will be included in future mailing initiatives. If you would like to opt out of receiving these mailings, send us an e-mail with your name referencing "no updates" in the subject line to: unsubscribe@TradeCard.com.

During the registration process, TradeCard will allow you to choose whether or not you would like us to contact your trading partners for membership and other services related to transactions.

As a TradeCard member you have the right to opt-out of being listed in the TradeCard Membership Directory, which only members and alliance partners will be able to access. This means that TradeCard allows you to determine how "visible" your organization will be to other organizations within the TradeCard network.

6. How do I know TradeCard is adhering to its Privacy and Confidentiality Policy?

The TradeCard proprietary system is protected by a VeriSign Global Secure Site Certificate. TradeCard is also a member of the International Chamber of Commerce (ICC) and

plans to abide by the ICC rules and guidelines for electronic contracting when they are finalized. Further, TradeCard is committed to having our privacy and confidentiality policies and procedures audited by an independent third party.

7. What about children's online privacy protection?

TradeCard understands the importance of protecting children's privacy. The TradeCard Web sites are not intentionally designed for or directed at children 13 years of age or younger. It is TradeCard's policy never to knowingly collect or to maintain information about anyone under the age of 13.

8. Whom may I contact at TradeCard to find out more about your privacy practices?

Please contact our Privacy Office by e-mail at privacy@TradeCard.com. You may also call TradeCard and ask to speak to the Director of e-Compliance. We welcome your comments and suggestions about how we can improve our privacy and security procedures. You may also contact us if you believe we have not complied with our Privacy and Confidentiality Policy with respect to your personal or confidential business data.

Although TradeCard adheres to industry standard practices to protect your personal information and your company's confidential data, we cannot ensure that this information will never be disclosed in ways not otherwise described in this Privacy and Confidentiality Policy.

Source: URL: http://www.tradecard.com/privacy/policy.html . 18 August 2000 .

APPENDIX IV
TRADECARD SYSTEM SECURITY DETAILS

TradeCard uses the information provided by the member for the following purposes:

- to contact the member, if necessary,

- to service a member's account or for other administrative purposes.

- to resolve disputes,

- to troubleshoot problems,

- to enforce TradeCard's Member Agreement,

- for marketing purposes.

In addition, the TradeCard system uses the transaction details to automate and to streamline a member's international trade transaction by checking for

electronic data compliance, providing reporting features, and transferring data from previous forms to those of the current transaction.

A TradeCard member has the right to opt-out of being listed in the TradeCard Membership Directory, which only members and alliance partners are able to access. Thus, TradeCard allows a member to determine how "visible" the organization will be to other organizations within the TradeCard network. These visibility options become available when other organizations are creating communities and when other organizations are searching for trading partners during new document creation.

1. *Organization is listed as Public* – any TradeCard member will be able to add the organization to its private community. A member organization will also be available when a party search is performed during document creation.

2. *Organization listed as Protected (sellers only)* – allows any TradeCard member to see that the organization is a TradeCard member; however, the organization must accept an invitation to join another organization's community before it can be added.

3. *Organization is listed as Private* – no organization will be able to add a *private* organization to its private community unless the organization's administrator accepts an invitation to join that community. It will also not be visible in a party search during the creation of a new document.

TradeCard members can use the system's administrative function on the transaction Web site or contact TradeCard Member Services to maintain up to date account information.

Server Authentication – 128 Bit Digital Server ID

A Verisign Global Secure Site Certificate protects the TradeCard system wherein the Global Secure Site ID provides the client browser with the communications encryption of 128 bit (using a US domestic Web browser) and 40 bit data encryption (using an exportable Web browser). Both Microsoft

Internet Explorer 4.0 or later and Netscape Navigator 4.0 or later support this function.

All TradeCard servers are located in key-locked racks, in a code-locked room that is only accessible to employees responsible for maintenance and operation of the equipment. Each server is protected by a user ID password to gain access to the machine, two layers of firewall configured to allow only network transactions over set protocols/machines. Any irregular activity is logged. Direct access to the database is prohibited. All data access is directed through the Application Servers, which add another level of security for accessing data from the system.

2-Factor User Authentication – Physical Challenge/Response Token

Two-factor user authentication is used. It consists of:

1. a valid user name or ID and password and
2. an authentication code

The authentication involves a smart card technology with a wireless handheld reader to match a challenge code prior to gaining access to the system. The 128-bit encryption provided by the Secure Socket Layer (SSL) session between the browser and server protects the user ID and password. The encryption, however, is not a guarantee for protection of the user ID and password as these could be easily obtained, e.g., by looking over someone's shoulder. Thus, TradeCard provides additional protection to all approved members through the smart card and reader, known as the TradeCard e-identity security system, which generate a one-time access code.

Only the user knows the password; only hash values are stored in TradeCard's database and this information is not accessible to TradeCard employees. The user is also protected because at login time a token is generated for the login session and stored in the user's Web browser as a session cookie for that session only (persistent Web browser cookies are not utilized). Login session also requires an inactivity time-out such that the user needs to re-enter the user ID and password to re-authenticate the user's identity.

Digital Signatures

Digital signatures are required at initial login time in the TradeCard system. These signatures authenticate electronic data and verify that a specific user created an electronic document. An invalid digital signature prevents a transaction from being processed and any attempt to conduct a transaction using an invalid digital signature is logged.

TradeCard issues a unique digital key pair – a password encrypted private key and public key – to the approved users of the system the first time they access the TradeCard system. The private key is required every time a user signs a document in the system during a transaction. The public key validates the authenticity and integrity of an electronic document when the document is received and as a means of verifying a document at any time in the future.

Creating a digital signature involves the user browser passing the user's encrypted private key, password, and document data into a digital signature creation algorithm. The algorithm result is the document signature. The document data and document signature is forwarded onto the TradeCard application server for processing. Validation of the electronic document is through the TradeCard application server passing a user's public key, electronic document and digital signature into a digital signature verification algorithm. This confirms that the digital signature on the document is valid and that the document is not altered after it was created.

APPENDIX V
TRADECARD'S CORE PARTNERS

Company Name: Coface Group

Headquarters: Paris La Défense Cedex, France

Type of business: Export credit insurance, credit information and trade receivables management

Company Name: Thomas Cook Group Ltd.

Headquarters: London, England

Type of business: International travel and financial services

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