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Industry-specific set of e-business solutions : An introduction to vertical communities

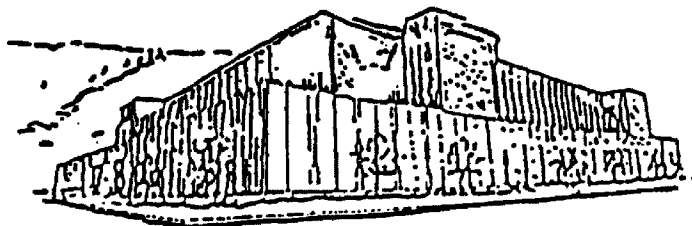Brumby McLeod
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An Industry-specific Set of E-Business Solutions:

An Introduction to Vertical Communities

By:

Brumby McLeod

BS, The University of Georgia, 1996

presented in partial fulfillment of the requirements

for the degree of

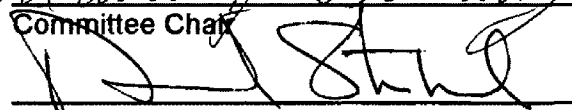Master of Business Administration

University of Montana

1999.

Approved By:

Committee Chair

Dean, Graduate School

1 - 19 - 2000

Date

UMI Number: EP38746

UMI

Dissertation Publishing

UMI EP38746

ProQuest

An Industry-specific Set of E-business Solutions: an Introduction to Vertical Communities (44 pp.)
Vertical communities are the business-to-business portal solution to e-commerce. The creation
of these communities is just beginning as business-to-business transactions make a paradigm
shift from a traditional business environment to an Internet environment. Vertical communities
are evolving from electronic marketplaces that provide an e-commerce solution for purchasing
direct (industry-specific) materials. As participation grows, the marketplace is fed with industry
content, additional e-business solutions, and new technology. The ultimate goal of a vertical hub
is to become the daily toolset for an industry participant via the Internet. A neutral and secure
party creates the community. The hub is not participating as a major player in the particular
industry in order to keep from having a conflict of interest.

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Introduction

In August 1999, Business 2.0 presented a 40-page article on business-to-business e-commerce. In that article, the authors introduced an emerging type of e-business model that went beyond the e-commerce transaction models for buying and selling products and services to provide sets of e-business solutions within one web site. Solutions within that emerging model included customer relationship management, outsourcing, industry content, online bill presentment, payment technologies, supply chain management, globalization, and Internet marketing. These new e-business models are referred to as hubs or communities because they gather players within a particular industry to form a global Internet presence for conducting industry-specific business transactions. The article in the August 1999 issue of Business 2.0 titled "Let's Get Vertical", and attendance at a recent seminar titled "E-business: Opportunities, Challenges, & Winning Strategies", were the main influences in choosing to write a professional paper on vertical communities.

This paper is about an emerging type of e-business model known as a vertical community. A vertical community is an industry-specific web site that provides e-business solutions ranging from e-commerce, document sharing, document creation, bill presentment, tracking, contract negotiations, credit services, etc. The number of solutions is essentially endless at this time as existing activities are able to move to an online platform because of new applications and technologies. Vertical hubs use e-business solutions along the value chain to integrate the suppliers, customers, manufacturers, and competitors through strategic partnerships. The solutions within a vertical hub add or create value by streamlining and eliminating redundancy of current or traditional processes being used within an industry. To truly understand vertical communities, their evolution needs to be discussed.

Hub models are evolving from electronic marketplaces (e-marketplaces), a web site where buyers and sellers come together to buy or sell products and services. E-marketplaces are one of the

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three categories of e-commerce models; the other two are buy-side and sell-side models. E-marketplaces were initially targeted to business-to-consumer transactions until businesses started to realize the potential of e-marketplaces in creating efficiency in their supply chain management process. The one characteristic that separates an e-marketplace from buy-side or sell-side models is that e-marketplaces have two-way communication between buyers and sellers (PriceWaterhouseCoopers, 50-51). The owner of the e-marketplace is neutral in the purchasing decision because the marketplace owner simply creates the platform and infrastructure that mediates between buyers and sellers.

The only control the owner of the e-marketplace has in the decision is whether or not a buyer and/or supplier may participate in the e-marketplace. Business-to-business e-marketplaces require registration to participate, because the material is considered confidential. The e-marketplace is an infomediary, an information intermediary that creates a marketplace based on an industry, consumer, or client (PriceWaterhouseCoopers, 33). Some examples of business-to-consumer e-marketplaces or infomediaries are www.ebay.com and www.priceline.com. These web sites bring buyer and sellers together, allowing each to accept or reject an offer by way of various auction styles.

In relation to business-to-business transactions, several companies have begun taking this e-marketplace model or variations of the model and applying it to a specific industry. The initial solution is supply chain management or procurement via an e-marketplace. Although the customers are few, the value is much larger than business-to-consumer transactions (Mohr). As these industry-specific e-marketplaces are created they expand to offer additional services and solutions because of the value created in bringing suppliers and buyers together onto a neutral and secure web site. The additional solutions and services are what create a paradigm shift from an e-marketplace to a hub. There is currently a huge race to create e-marketplaces with announcements from companies such as Oracle to create www.oracleexhchange.com and PriceWaterhouseCoopers to create www.e-conomy.com. Their strategies are broad and do not

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provide an industry focus initially, only general purchasing requirements such as office equipment, office supplies, and travel services.

There are two types of hubs: vertical and functional. Vertical hubs provide industry-specific content and sets of business solutions via the web. The web site the vertical community is often referred to as the platform or infrastructure. Functional hubs are the individual solutions provided within a vertical community. Functional hubs are often referred to as horizontal hubs because they focus on one particular solution such as supply chain management, customer relationship management, or payment technologies (Kaplan, 89). A vertical community is not independent of functional hubs because functional hubs provide the solutions. Functional hubs tend to be used across various vertical communities because they are function-specific. A collection of functional solutions and content catered to a particular industry are what create a vertical hub.

An example of a vertical community is www.e-steel.com. This community acts as an infomediary for the global steel industry (Whelan, 123). An example of a functional hub is www.MRO.com. This hub provides a functional solution for the purchasing of maintenance, repair, and operations supplies. The functional hub would be an additional solution to the direct materials supply chain management solution offered at www.e-steel.com.

Besides the introduction, this paper is divided into five chapters: e-marketplaces, hubs, the race to marketplace, the role of partnerships, and a closing conversation. E-marketplaces are typically the starting solution on the path to becoming a vertical community. Many web sites refer to themselves as a vertical hub at this point, but lack the content and set of e-business solutions along an industry's value chain to truly qualify as a vertical community. An e-marketplace alone is functional, even if it is an industry specific marketplace. Vertical communities require a paradigm shift from an e-marketplace to a vertical hub. The process does not occur overnight. It requires a dominance in the race to the marketplace and critical partnerships with end-users,

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content providers, and technology providers. The remaining portion of the introduction provides an executive summary to each of the five chapters.

Chapter 1:   E-marketplaces

Nearly all vertical communities begin with an e-marketplace. The establishment of a successful e-marketplace creates the opportunity to make a paradigm shift from an e-marketplace to a vertical community. For this reason, this paper begins with a discussion on e-marketplaces. There are four categories of e-marketplace models: catalogue, auction, exchange, and barter. In this chapter, the four categories of e-marketplaces are discussed in detail. Each model has characteristics that make it applicable to buying or selling a particular type of product or service. Real life examples will be discussed to help the reader better understand the models and their application to business-to-business transactions.

Chapter 2:   Hubs/Communities

In this paper, the terms hub and community are interchangeable. The terms are used to describe the collective group of participants in a business-to-business or industry-specific web site. This section begins by describing how an e-marketplace makes a paradigm shift from an e-marketplace to a hub. Next, it describes the two types of hubs in detail. Then, the relationships that the two types of hubs provide for one another are discussed. And finally, examples of functional and vertical hubs are reviewed. Vertical communities become the focus of the remaining sections of the paper.

Chapter 3:   Race to the Marketplace

The development of e-commerce in the business-to-consumer sector has boosted confidence in business-to-business e-commerce creating a race to create e-marketplaces and vertical communities on the Internet. However, traditional industry practices complicate the paradigm shift because of large enterprise software systems, the integration process, and long established electronic data interchange networks. This chapter discusses the reasons the shift is complicated for business-to-business transactions, the main players and industries making that shift, the

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strategies many organizations are taking to create vertical communities, and the likely mistakes that will result in failure. Established vertical communities and how they have developed thus far provide a large amount of content for this chapter. The implications of being first to market become apparent in this chapter.

Chapter 4:   The Role of Partnerships

Vertical communities rely heavily on partnerships because with the exception of the platform and infrastructure, the value of these hubs is intellectual in nature. For that reason, this chapter is broken down into the critical partnerships and their scope in creating a vertical community for a particular industry. There are five critical partnerships in a vertical community: technology, buyer, supplier, content, and financial. Each of these partnerships and their role in creating a vertical community are discussed in this chapter.

Chapter 5:   A Closing Conversation

This chapter provides a final analysis on the previous chapters. In addition, this section focuses on the risks and future of vertical communities. It is intended to spark discussion and questions. For instance, are there new emerging categories of e-marketplaces? How many vertical markets can fit within a particular industry? Who is dominating the race to the market? Does a horizontal strategy for vertical communities make sense?

Chapter 1:   E-Marketplaces

This paper begins with electronic marketplaces because that is where most vertical communities begin (Kaplan, 89). E-marketplaces while like online brokerages, infomediaries, or middlemen to the financial market or a particular industry. However, they are more complicated than online brokerages because of logistics and fulfillment related to the actual service or product being sold (Dalton, 190). These industry-specific e-marketplaces require more than financial transactions and informational data. The e-marketplaces discussed in this section are business-to-business transaction types that focus on the purchasing of direct (industry-specific) materials. They require strong relationships between buyers and sellers, software solutions, domain-expertise, logistics, and a strong marketing strategy. Many e-marketplaces are started by organizations that have strong client relationships in place and wish to share those relationships in the form of e-marketplaces. These marketplaces are usually not industry-specific. One example is PriceWaterhouseCoopers and their new e-marketplace, www.e-conomy.com. This marketplace has no industry focus. The members of the marketplace will be categorized after a sizable number of participants have accumulated. Other e-marketplace startups possess the technology know-how and seek out the domain-expertise. While others have industry expertise such as www.PlasticsNet.com and seek out the technology know-how. Once created, e-marketplaces are not overnight successes regardless of the startup strategy used.

Many organizations have invested enormous amounts of time and money to increase efficiency and lower transaction costs along the supply chain. For many industries, such an investment has resulted in electronic data interchange (EDI) proprietary networks. These networks require industry-specific standards to allow electronic communications such as purchasing between buyers and sellers. These EDI standards and proprietary networks require substantial investment, often over several years. Because of the substantial investment required to conduct EDI transactions, EDI has primarily involved large companies within an industry with few major

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players such as the automotive industry. Many of these large players within an industry are unlikely to jump on the e-marketplace bandwagon and abandon their EDI systems. For this reason, it takes time for large organizations emersed in EDI to make a paradigm shift from an EDI proprietary network to an e-marketplace. One advantage that e-marketplaces have over EDI is that, "EDI has always been difficult and expensive to implement and has not been widely adopted, particularly within small and medium enterprises" (Shih, 5). Even with proven performance and efficiency of an established e-marketplace, a large organization will most likely only supplement their current EDI network with e-marketplaces at this time. As the growth in business-to-business Internet communication grows, the larger players will make a shift because of new technologies, implementation improvements, and ease of integration. The following section introduces e-marketplaces, the strategies behind them, and examples of business-to-business e-marketplaces.

E-marketplaces are currently divided into four categories collectively referred to as market-making mechanisms. They are referred to as market-making mechanisms because they are the method in which a marketplace is created. The mechanism (e-commerce solution) is the backbone of the industry-specific e-marketplace. The mechanism is selected to be the best method for materials to be sold online, and is critical to the success of an industry-specific e-marketplace. Most industry-specific e-marketplaces use only one market-making mechanism because of the complexity in implementing more than one solution at a time. Each of the mechanisms has characteristics that fit the product or service being sold and or the buyer making the purchase. The four market-making mechanisms of e-marketplaces are catalogue, auction, exchange, and barter (Kaplan 89, 91). Each of these market-making mechanisms will be discussed in terms its characteristics, an analysis of a vertical community using that specific market-making mechanism, and the solution providers.

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Catalogs

The least complex and most frequently used market-making mechanism is a catalog. This market-making mechanism is a direct result of mail catalog stores such as Lands End and LL Bean creating retail stores online. However, these online catalogs are different than catalog e-marketplace, because catalog e-marketplaces have multiple sellers or suppliers. A catalog market-making mechanism would create a catalog that would create competition horizontally showing products and services side-by-side from multiple competitors, unlike an online retail store (Zerega). This market-making mechanism is ideal for business-to-business transactions because businesses typically go through a bidding process before large purchases are made. On the other hand, online retail stores involved in business-to-consumer transactions rarely want to be on the same page with their competition. An example of a business-to-business e-marketplace utilizing the catalog market-making mechanism is PlasticsNet.com.

PlasticsNet.com is a business-to-business e-marketplace that utilizes the catalog market-making mechanism. The company was created in 1995 and is one of the first business-to-business e-marketplaces on the Internet. Although it is becoming a vertical community for the $370 billion plastics industry, PlasticsNet.com CEO Tim Stojka claims the company focuses only on the buyer segment (Davis, 104). This makes since because most vertical communities begin with an e-marketplace that focuses on the supply chain of direct materials. The additional content and services provided by PlasticsNet.com are being added to battle with competing e-marketplaces and create stickiness. The catalog mechanism was selected because of the previously established coding system used to identify many of the chemicals used in plastics manufacturing and processing. The preexisting codes simplified the cataloging of plastic components online. PlasticNet.com provides a comprehensive catalog (database) of products needed by plastic industry participants that can be accessed by product name or product code online. This web interface at www.PlasticsNet.com accesses a database of various suppliers, their prices, product specifications, and then allows purchasing managers the ability to make a purchase online based on the selection criteria. There are essentially two main catalogs: one for resins and materials

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and another for equipment and supplies. These two catalogs are created from hundreds of supplier catalogs.

PlasticsNet.com reaches two target markets through customization and personalization of its back-office catalog: purchasing solutions for the plastics processor and e-commerce solutions for the supplier. The plastic processors are each able to create their own catalog from the large database creating a customized purchasing center. Plastic processors can even have pre-negotiated prices on items with supplier contracts made available online. Additional online services for the plastic processor includes bill presentment, order tracking, and customer support.

On the supplier side, PlasticsNet.com offers an e-commerce solution without significant investments for suppliers because the e-marketplace provides the solution. PlasticsNet.com provides instant access to an e-marketplace that suppliers do not have to promote as an individual web site themselves. PlasticsNet.com's web site creates a critical mass of buyers and sellers, reducing fragmentation of the industry supply chain.

Revenue is generated three ways. PlasticsNet.com generates revenue from advertising, supplier registration fees of $5,000-$8,000, and a percentage of sales ranging from 5-10%. The company's venture capital came from ICG (Internet Capital Group). ICG provides operating assistance, management expertise, and financing. ICG is one of the largest share holders of the plastic e-marketplace. PlaticsNet.com is planning an IPO in 2000. PlasticsNet.com creates customer retention by adding services such as technical datasheets on plastics products, a job bank, technical forums, and a new auction (Davis, 104). They are becoming a vertical community, because PlasticsNet.com has established its e-marketplace and is beginning to add industry content and new solutions. PlasticsNet.com is not alone in their pursuit of dominance. The race to the marketplace within the chemical industry is discussed in chapter three.

The technology solution providers behind PlasticsNet.com are CSC (Computer Science Corporation), Delano Technology Corporation, eCredit.com, and Trading Dynamics. CSC provides the Internet market business model and implementation of the information technology strategies. They are the technology consultants. Delano Technology provides an e-business application suite that leverages e-mail and the Internet to provide better customer service to all relationships within the e-marketplaces. ECredit.com provides the necessary payment technologies and rapid credit approvals for successful transactions. Trading Dynamics is their newest technology partner. They are providing the new auction market-making mechanism software application currently being implemented at PlasticsNet.com. Although PlasticsNet.com did not use these solution providers, Ariba, IBM, and Commerce One are other solution providers of catalog market-making mechanisms (Blakenhorn).

Auctions

This market-making mechanism was made famous by Internet companies such as Ebay™.com and Priceline™.com. Auctions increase the two-way interaction between buyers and sellers because of spatial matching based on agreement. Spatial matching means the solution actually locates the buyer or seller depending on the auction type. There are three types of auctions: Yankee, Dutch, and reverse auction (PriceWaterhouseCoopers, 33). The Yankee model starts with the lowest bid and takes the highest bidder within a certain time constraint. Price, quantity, and time of the initial bid all go into the final award in a Yankee style auction. The Dutch auction model starts with an extremely high price in which the price is lowered until a buyer claims it by agreeing to the posted price. A reverse auction allows the buyer to name their price and sellers are capable of accepting that price. This auction style is used by Priceline.com to sell capacity on commercial airlines. Auctions are best utilized for buying and selling used capital equipment, perishable capacity, and hard-to-specify products (Kaplan, 90). Many auctions allow buyers to become sellers. Some of the greatest challenges for auction market-making mechanisms are liquidity, misrepresentation/fraud, and fulfillment. Auction e-marketplaces usually provide better prices for the buyer. On rare specialty items, the auction might provide a greater price for the

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seller than would be attained by traditional auctions because of the potential increase of online market size.

One example of an auction e-marketplace is iMark.com. They offer an auction e-marketplace for buying and selling surplus equipment. Two former Procter & Gamble employees who saw a need for efficiency in the surplus asset marketplace created Imark.com. The e-marketplace currently provides three categories of equipment from which to buy or sell: process, packaging, and power generation and distribution. The auction allows for negotiations online. The actual transaction takes place following a match being made between a buyer and the seller. This e-marketplace is function-specific since it does not focus on a particular industry yet. Imark.com almost immediately implemented new services to combat the shortfalls of auctions such as misrepresentation and fraud. The new services include inspections and active broadcasts. The inspections will allow an audit of the equipment and identify the seller prior to negotiations, while the live broadcast allows the buyer to see the equipment more thoroughly.

Imark.com is looking to add additional services like transportation and rigging, financial services, engineering service referrals, appraisals, and photography services. Because of the need for specialization, it is very likely that Imark.com will become a functional hub rather than a vertical hub. Industries such as the railroad industry have an enormous amount of used equipment that could be auctioned off. The solution provided by Imark.com is a functional solution for many capital-intensive industries that could be customized to meet the needs of a particular industry. Customization of their solution into various industries and the related vertical communities could prove to be beneficial. Customization will occur as the e-marketplace grows in size. This looks to be happening sooner rather than later since iMark.com is already advertising industry-specific auctions for the coming year.

Revenue is generated from a 5% commission on the seller. Initially, Imark.com charged the buyer a 5% commission fee on top of the final transaction. However, customer feedback from

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both buyers and sellers led them to make a change. Imark.com has created an opportunity for another infomediary, an auction broker. An auction broker handles the auctioning of used equipment for an industry or a company. Industry-specific auctions require domain expertise.

Although Imark.com provides the market-making mechanism and Internet platform, an organization still needs someone to manage its role in the auction. Imark.com only revealed two of their partnerships on their web page. The first is iEscrow.com. They are a fulfillment solution providing and monitoring the exchange of assets and money. The other partner revealed was the venture capital partner. Austin Ventures is the venture capital firm that backed iMark.com. They specialize in high tech investments. Moai Technologies, Dynamic Trade, WebVision, and OpenSite Technologies are additional solution providers of auction market-making mechanisms (PriceWaterhouseCoopers, 81).

Exchanges

This market-making mechanism is contractual in nature. Exchanges usually allow sellers to form contractual prices with buyers once the temporary matching has been completed. Exchanges are the fastest growing market-making mechanism online. They are more personal and predictable than auctions. They also provide several advantages over EDI proprietary networks because they create an e-marketplace, provide contractual agreements via the Internet, and allow for customization to the buyer. It works via temporary matching based on economic theories of supply and demand. It is frequently used to liquidate excess inventory, to manage volatility, or to fill excess capacity. The products and services bought and sold in exchange market-making mechanisms are near-commodities, high-fixed-cost assets, and volatile market items such as fuel. This market-making mechanism mimics the commodity markets and hedging activity taking place around the world.

Energy is a commodity that is being bought and sold via exchange market-making mechanisms online. Enermetrix.com is one such e-marketplace. Its target market is the deregulated energy

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market in the United States (Geck, 228). Exchanges often include catalog capabilities because some suppliers want to maintain the integrity of their own catalogs and still perform negotiated pricing with each individual buyer.

E-steel.com is the leading e-marketplace utilizing an exchange market-making mechanism. It provides buyers and sellers an e-marketplace for purchasing various types of steei such as hot rolled, cold rolled, coated, and plate. E-steel.com allows buyers and sellers to initiate transactions, specify products, set commercial terms, negotiate, and close business online. This marketplace has financial analysts' attention because the steel industry is a $700 billion global industry. Improvements in logistical services will bring greater success to this e-marketplace.

A 0.875% transaction fee to the seller generates revenue for E-steel.com. There are no membership fees or application fees. This strategy contributes to E-steel.com becoming a true e-marketplace. Many e-marketplaces have had to adjust their fee structures to ones similar to E-steel.com because entrance barriers in the form of fees deter from creating a true competitive marketplace.

Much of E-steel.com's success has come from its partnerships. E-steel emphasizes their financial, content, and technology partnerships. The technology partners are most important to the web site because of the emphasis E-steel.com puts on their exchange solution titled STEELDIRECT™. This solution is provided by BroadVision. Although is an exchange market-making mechanism, the company refers to it as "extended relationship management" software. This description works well considering the enormous flexibility the solution provides. This exchange solution allows suppliers to block confidential information from competitors while providing an open marketplace to buyers. Customer information requirements collected before an end-user is granted membership to the marketplace feeds the customer relationship management (CRM) database providing flexibility for the solution. In addition to BroadVision, E-steel.com also has partnerships with CSC, Silknet, and SYMIX. CSC provides implementation

and consulting services for the company. Silknet provides services similar to Delano Technology that leverage e-mail, phone, and the Internet to provide better customer service to all relationships within the e-marketplaces. SYMIX provides integration between ERP's and supply chain management systems for midsize manufacturing and distribution companies. SYMIX increases customer retention with customized integration (Pearlstein, 236). Although it is not used by E-steel.com, Tradex Technologies is another solution provider of exchange market-making mechanisms (Moran, 115).

Barter Models

This market-making mechanism is unique because it does not involve a purchase. Bartering is the oldest business model in the world, but the newest to e-business. This market-making mechanism requires a great understanding of how various products are used by various industries and consumers. Excess capacity and services are highly likely to be exchanged using a barter model. This market-making mechanism is extremely new and might be classified better as an extension of exchange models. However, there is definitely a market for this model. Many industries use bartering in its traditional way. For example, the railroad industry uses bartering to settle discrepancies in locomotive hour usage and car hire. Locomotive hours are how locomotive owners keep up with locomotive usage by a foreign railroad. Railroads pay for locomotive hour accumulation by loaning their locomotives back to those they owe locomotive hours. Car hire is the term used to describe the accumulation of railcar usage in terms of time and mileage. Bringing customized solutions online for settling usage discrepancies would constitute a barter market-making mechanism. Sole revenue generation from a barter model is highly unlikely since revenue transactions do not take place in a barter model. However, a barter model would complement a set of e-business solutions in a vertical community. Barter market-making mechanisms are used to improve efficiency by filling capacity, maximizing equipment utilization, and providing alternative methods of conducting transactions. Pre-established methods of tracking equipment usage, or measurement techniques should be used to create a barter e-marketplace. New barter measurements tend to complicate the process and revert back

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to financial transactions in the end. There is not enterprise software applications for barter models. However, the exchange and auction models are flexible enough to create a barter model that is not dependent on financial transactions.

Final Thoughts

The startup e-marketplaces within a particular industry have chosen different market-making mechanisms. The product or service being bought and sold within the e-marketplace should guide the selection of the market-making mechanism. The chemical industry has seen segmentation within their industry-specific e-marketplaces because of the difference in market-making mechanism and the products or services they choose to offer online. They are all in a race to the marketplace, trying to gain a competitive advantage on other startup e-marketplaces or vertical communities. Not all of these companies will become vertical communities. It is quite possible that one or all of them will become a functional hub within another vertical community. Only time will tell if a particular vertical community is too broad in focus. What is important to understand from this chapter is that e-marketplaces are most frequently the beginning of hubs/communities. The value of an e-marketplace increases as combinations of market-making mechanisms are used, content is added, and other non-transactional or e-business solutions are added. Scope initiates the paradigm shift from an e-marketplace to a hub. Nearly all successful e-marketplaces will become hubs. The type of hub they become however is dependent upon whether or not they are function-specific or industry-specific. The next chapter describes the transition that an e-marketplace will make on its journey to becoming a hub.

E-marketplaces work best for fragmented industries, fragmentation of both buyers and suppliers. If an industry is dominated by just a few players, as in oligopoly's like the automotive industry, a direct business model is ideal, not a hub. That is because many suppliers are serving a few buyers. For instance, Ford, General Motors, and Chrysler would not team up to form a vertical marketplace together. They each have enough buying power and control with their respective suppliers to go direct. As further proof, automakers have forced suppliers into EDI or their

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individual (direct) e-marketplace. Listed below are two figures that explain the benefits to buyers and sellers.

Figure 1.1: Buyer Benefits

Reduced soft costs

➜ By locating suppliers, viewing products, negotiating contracts and communicating electronically
➜ By reduced processing time for orders and approvals
➜ Automation of reoccurring bids and purchases
➜ Real time generation and processing of orders

Savings on Purchasing

➜ Competitive pricing achieved through bid and negotiation process
➜ Buying power via the hub (Consortium)
➜ Centralization of purchasing activities between multiple web sites and supplier base; Aggregate purchasing and maximize discount pricing
➜ Standardize commonly purchased items through negotiated contracts

Measurement

➜ Evaluate supplier contracts and performance
➜ Evaluate buyer performance and purchasing data
➜ Audit trail allows management to analyze spending patterns

Product Flexibility

➜ Seamless interface is designed to fit existing systems
➜ Management tools allow organization to manage users, set spending limits, access
➜ Suppliers and determine access levels
➜ Customizable platform meets a companies unique needs and business processes

Information Management

➜ Suppliers maintain catalogs and information in real-time maximizing accuracy
➜ Link to web sites without leaving the program

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Figure 1.2: Seller Benefits

Provide Customers with Unparalleled Convenience

� Because communication happens so fast, the internet has "raised the bar" in customer service

➥ Customers are served in real-time as models are discontinued, prices change, etc

➥ Save time and money since the complete electronic purchasing transaction will take less man-hours and paperwork, reducing the buyer's cost of processing a purchase. In addition, savings in phone costs, filing, printing and reduced personnel are realized.

Maintain Competitive Edge

➥ The incentives for big buying organizations are too great to ignore.

➥ Unlike other advertising media, the seller's products and services can be advertised to interested buyers, globally

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Chapter 2: Hubs/Communities

The terms hub and community can be used interchangeably. There are two types of hubs: functional and vertical. This chapter describes the difference between the two types of hubs, the transition from an e-marketplace to a hub, and the relationship between the two types of hubs. The two types of hubs are not independent of one another. There is a strong interaction between the two. Nearly all vertical communities begin as industry-specific e-marketplaces. However, not all functional hubs begin as e-marketplaces because not all functions within an industry's value chain are related to financial transactions or purchasing. For instance, car tracing in the railroad industry is not an e-commerce solution that generates revenue; it is an operating solution and a customer service solution. However, it is a major function for both railroads and freight customers. Interestingly, many functional hubs would not survive independently on the web because they do not generate substantial revenue. Hence, vertical communities foster community by offering functional e-business solutions, functional hubs, industry-specific e-marketplaces, and industry content. In addition, many e-marketplaces would not survive independently, because without additional content and solutions, a competitor offering additional services within their e-marketplace could surpass a competing e-marketplace. Additional services are what create the competitive advantage. Vertical communities should create dependency for the members of a vertical hub by becoming a daily Internet tool set for participants of an industry. Although the customer acquisition cost is high when creating a hub, the retention of a customer becomes more concrete once an industry participant becomes a member of a community.

Functional versus Vertical

Functional hubs provide a solution that is transferable across various industries. The functional solution is often referred to as a horizontal solution. For example, the purchasing of maintenance, repair, and operating (MRO) supplies is common to nearly all organizations regardless of the industry. MRO.com is a functional hub that uses a catalog market-making

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mechanism to create its e-marketplace. Functional e-marketplace hubs are for the buying and selling of indirect materials, materials that are not industry-specific. However, functional hubs do not have to start as e-marketplaces. For instance, functions such as employee benefit services are also functional hubs. An example would be Employease™.com. They provide business services for managing and communicating employee information. There is also a difference between functional hubs and functional solutions. Functional hubs are functional solutions that can be utilized across various industries. Functional solutions are task specific and industry-specific, which means the solution can not be utilized across various industries. An example of a functional solution is car tracing in the railroad industry. It is industry specific and task specific.

Vertical hubs are industry-specific web sites. As mentioned earlier, they usually get started via an e-marketplace for direct materials, those materials specific to an industry. For instance, E-steel.com has an e-marketplace exchange that allows buyers and sellers the opportunity to purchase and sell various types of steel in various forms. Vertical communities prove most successful for industries that have a large fragmentation among buyers and sellers. The $700 billion global steel industry is a good example. Vertical communities work best in existing supply chains that are inefficient. The auto industry is not a good example of an inefficient supply chain. Companies such as GM and Ford are so large and powerful, that suppliers are forced to use the individual automaker's market-making mechanism if they want their products purchased by the automaker. These companies use direct business models for supply chain management because of their enormous buying power. Vertical communities must create critical mass. For this reason, industry-specific e-marketplaces seeking to become vertical communities must provide additional content for customer retention. Most importantly, a vertical community is managed and operated by individuals or groups with domain expertise (Kaplan, 89).

The Paradigm Shift

Before continuing on, a quick explanation and review of terminology is needed. E-business is a general term used to describe business conducted online. E-commerce is a term used to

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describe financial transactions made online. E-marketplaces are business models utilized to conduct e-commerce. Exchanges, catalogs, and auctions are market-making mechanisms used to create e-marketplaces and are often referred to as e-marketplace models. Functional hubs are electronic solutions that are common to various industries. An e-marketplace for purchasing MRO supplies is a functional hub. A vertical community is an e-business that conducts e-commerce via e-marketplaces utilizing one or more market-making mechanism. In addition, a vertical community must go beyond an industry-specific e-marketplace to provide industry content, functional hubs, and functional solutions.

There are other possible methods of becoming a hub, but this paper takes the approach of evolving from an e-marketplace. As these marketplaces are developed, the successful ones fall into a niche. Some deal with direct materials for an industry, while other e-marketplaces develop along a common area in the buyer segment such as maintenance, repair, and operating supplies (MRO). The various strategies in creating vertical hubs will be discussed in the next chapter. These business-to-business e-marketplaces are trying to move beyond the e-commerce or transaction solution to become hubs that foster community. Functional e-marketplace solutions migrate into functional hubs as they become integrated into vertical communities. Vertical e-marketplaces become vertical communities as they add industry content, functional solutions, and functional hubs.

Industry-specific e-marketplaces become vertical communities when the web site becomes a combination of all the characteristics listed below.

- A portal for conducting industry-specific transactions
- A functional manager's daily toolset
- An industry information library
- Sets of e-business solutions are offered
- Functional hubs have been integrated
- A critical mass of once fragmented industry players has been achieved

Portals are being down played in the business-to-consumer market because of the inability to keep Internet users locked in. Stickiness is difficult because consumer characteristics are more

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difficult to understand in terms of content. A business-to-business portal has a known group of industry players and recognizable characteristics. The portal boom in business-to-consumer transactions turned into a flashing billboard of various web site links and advertisements that took the user away from the portal. The advertising revenue model essentially destroys the portal because it takes the user to new web sites. However, in business-to-business transactions and interaction, portals become vertical communities. Vertical communities are industry-specific portals. The portal does not provide a link, but instead provides the solution and information within the industry-specific portal. If a vertical community is designed along an industries value chain and the value chain is identical or similar within each participating organization, then the ability to attract and retain users with domain content and solutions is much more likely than business-to-consumer portals. Industry-specific portals can recognize and understand the user better than business-to-consumer portals. (Halper)

Functional hubs will become back-end service providers for vertical communities. Integration and customization capabilities of functional hubs will create a competitive advantage between competing functional hubs. Functional hubs understand the functional managers' tasks and target that manager with content and e-business solutions. The characteristics of web users using an industry-specific web site are much easier to predict and understand when the end-users are identifiable and traceable with customer relationship management software. Not all functional e-business solutions are hubs. Functional hubs reach across industries. The example of a car tracing solution is a functional solution, but not a functional hub. A functional solution that is not a hub creates enormous value for a vertical community because it reinvents or eliminates traditional methods of performing tasks. The critical mass created by vertical communities makes functional solution development more cost effective because of the number of participants.

Interdependency

In order to better understand hubs, imagine a tic-tac-toe board. The vertical lines represent various industries such as plastics, steel, or the railroad. Horizontal lines represent the tasks

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along the value chain of each industry. Some of these tasks are identical horizontally, while others are specific to a particular industry. For instance, MRO purchases are common across all industries making that solution a functional hub. On the other hand, car tracing for the railroads and its customers is industry-specific and function-specific. Interestingly enough, car tracing for the railroad industry exists, but membership fees or inhouse development limits its use. This functional solution will not survive independently as a web site. Functional hubs extend horizontally across vertical hubs. Successful functional hubs provide the solutions to create a vertical community. Vertical communities incorporate industry-specific solutions and horizontal functional solutions into the web site. With this said, the relationship between a functional hub and a vertical hub becomes apparent. They rely on each other to create synergy.

Final Thoughts

With the development of various technologies and solutions, there is the need for organizations to support a range of distinct business processes both inside and outside of enterprise boundaries. This statement alone becomes the purpose of a vertical hub. The outside processes are brought into one community. A vertical hub brings industry-specific content and solutions together online; a functional hub integrates and implements the solutions outside an enterprises boundaries. The vertical hub links the internal processes with the external organizations within a vertical community. A functional hub provides a specific solution such as payment technologies. The key technology issue is the need for organizations to support a range of distinct business processes both inside and outside of enterprise boundaries. Enterprise application integration is the pathway to success for vertical communities. A vertical community cannot create every solution and all the content for their web site. Instead the vertical community is an infomediary that provides the infrastructure for a community and then forms partnerships with those organizations that own the solution or content. A vertical hub organizes the various functions within an industry to interact with the outside world.

Synergy is the greatest benefit of vertical communities. Individual web sites for industry suppliers and functional hubs for e-business solutions complicate the web. Links to individual web sites deplete the e-marketplace or portal by sending Internet users to other places. In addition, the cost of maintaining web sites and reinventing the wheel for various solutions is costly. If all the industry players need the solution, provide it in one place. Why should every railroad in North America invent a car tracing system? In the next chapter titled "The Race to the Marketplace", the benefits of a vertical community become apparent. The chemical industry is used as an example to examine the race to become the vertical portal within the industry. The direct e-business models used by Dell and Cisco are inappropriate models when fragmentation among buyers and sellers exists, identical functions are performed by each organization, and content is scattered across thousands of independently run web sites. Vertical communities create synergy for industry players.

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Chapter 3:   Race to the Marketplace

This chapter is divided into two main sections. The first briefly summarizes developments that led to the recent business-to-business e-commerce boom. The second analyzes two unique examples to demonstrate the race to the marketplace. The first example looks at what is happening within the chemical industry in the race to become the vertical marketplace for that industry. The second example looks at VerticalNet™.com, a horizontal integrator of vertical communities.

Why the Recent Boom in B2B?

Most of the excitement over the last four years has been about business-to-consumer e-commerce. This type of transaction has been the most popular type of transaction on the web thus far. The term e-commerce comes directly from the transition of retail stores and catalogue merchants to online environments. Although this type of transaction is possible within a vertical hub, the focus of an industry-specific hub is business-to-business transactions and solutions. Because most of the initial e-commerce development on web sites was focused on providing a new or additional channel for selling products and/or services for the business-to-consumer transaction, many of the larger industries in the world were slow to move since business-to-business dominated industries such as automobile manufacturing and banking lacked business-to-business e-commerce solutions. In addition, many of the thousands of daily business-to-business transactions within these industries had been automated by electronic data interchange (EDI). (Fandray)

EDI has been around for twenty years. Manufacturers, financial institutions, railroads, and many other industries have industry-specific EDI standards that allow for electronic processing of industry-specific functions. For instance, the railroads are currently using EDI to distribute and

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share shipment information and have been doing so since the mid-1980s. But EDI has some characteristics that make Internet transactions more appealing for performing business-to-business transactions. (Jones) The following discussion compares EDI and Internet based solutions.

There are two major differences between EDI and the Internet: scope and EDI's proprietary nature. In scope, EDI is the exchange of electronic documents (invoices, payment, ship notices, etc.), while the Internet can include other services and exchanges peripheral to a transaction. On a proprietary note, the Internet uses an open network available to anyone with a connection to the massive network. No one owns the network. Access to information is controlled by the web sites themselves. On the other hand, EDI is owned and operated by the participating parties; it is proprietary. The communication standards used in EDI are industry-specific and require third-party solution providers known as value-added networks when standards between organizations do not match. This makes EDI extremely costly while creating a huge barrier to entry to small and medium sized organizations. Most EDI standards are set by the largest players in an industry. For instance, GM, Ford, and Chrysler set the automotive EDI standards. Small suppliers and automakers had little say in the establishment of EDI standards. Suppliers become locked into the requirements of the customer while the customer becomes locked into a small group of suppliers. EDI restricts the global marketplace that the Internet environment offers. EDI is the precursor to Internet business-to-business transactions because it, too, is an electronic method of performing automated business-to-business transactions across a proprietary network. Processes done via EDI include purchasing, electronic payment, and information transfer. Large organizations did not ignore Internet development, but used it as "brochureware" for the consumer to gather information on products, services, and the company. Corporations and solution providers were slow in realizing that the possibilities offered by the Internet could revolutionize current business models, eliminate processes, create better marketplaces, and provide a window into the enterprise resources locked within company headquarters. The focus and hype was on business-to-consumer transactions, not business-to-business transactions.

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As business-to-consumer retail stores were scurrying onto the web, large organizations were entering their own revolution in enterprise resource planning (ERP) software. These software application suites allowed organizations to run one software solution for managing enterprise resources. Accounting and finance functions are the backbone of ERPs. Examples of ERP providers are J D Edwards, Peoplesoft, Baan, and SAP. Enterprise applications are referred to as back-office applications because they are the key applications a business uses to track sales, productions, delivery, cash management, inventory, manage human resources, forecasting, customer service, knowledge management, quality management, and prepare accounting reports. Enterprise applications electronically record what is needed to maintain proper accounting practices and reporting requirements. Because ERP development is becoming standardized, it makes integration along supply chains a possibility. The standardization of enterprise applications into one ERP application allows e-commerce application developers an integration tool for front-office applications (web solutions). The two sides fed one another. The ERPs began building Internet integration technology into their enterprise back-office solution, while e-commerce application developers responded with web solutions that could be integrated with ERPs. These two developments helped enable the current race to the marketplace in order to become the next vertical community for an industry.

Front-office software is the software that interfaces directly with customers via the web. Front-office software development has come from Internet solutions targeted for business-to-consumer transactions. Rapid development of solutions was possible because individual consumers did not require complex integration with their personal computers or financial transactions. Web browsers and payment technologies paved the way for business-to-consumer e-commerce. On the other hand, the integration complexity for business-to-business transactions was too much for rapid deployment of web solutions. During the business-to-consumer web revolution in which payment technologies, shopping carts, auctions, and customization became common e-commerce solutions, business-to-business solutions came in the form of brochureware and order tracking (Hibbard, 128).

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Business-to-business e-commerce solutions and models are more complex than business-to-consumer solutions because business-to-business relationships are more complex and integrated. In addition, the switching costs are high for business-to-business transactions because of initial investments before the actual sale. For these reasons, business-to-business e-commerce solutions have brought about a surge of "intermediaries". These intermediaries are neutral parties that provide the infrastructure and solutions for industries or functional managers to simplify the process. In return, intermediaries foster communities full of relevant content for the industry or function, and host e-business solutions such as an e-marketplace. These middlemen or intermediaries are being referred to as infomediaries, because they mediate information online. Unlike business-to-consumer models that saw a reduction in intermediaries, business-to-business e-commerce models are creating infomediaries in the form of vertical and horizontal hubs.

Gartner Group estimates growth from 500 hubs today to nearly 7500 by the year 2002. Ninety five percent of the hubs will be vertical. The Precursor Group estimates a $50-$100 billion transaction value will flow through these hubs. Gartner Group also estimates 80% of the Global 1000 companies will participate in hubs by 2002. Projections by Forrester Research suggest that business-to-business transactions will grow from $43 billion in 1998 to $1.3 trillion in 2003 (Shih, 4). Keep in mind, that many of those transactions are merely part of a business-to-business transaction paradigm shift from EDI to an Internet environment. However, someone must provide the Internet solutions and environment.

In conclusion, the developments in both front and back-office software have come together. The technology and solutions are sufficient to begin integrating the two sides to create Internet e-business solutions, making Internet e-commerce a reality for industry-specific business-to-business transactions. The stages of awareness for Internet use within an organization according to Ernst & Young are URL presence, channel innovation, and e-business. Many organizations are at that third stage of awareness. It just so happens that infomediaries are providing the pathway. And unpredicted by many, the infomediary is returning in the form of vertical hubs.

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These third parties are creating value to organizations by providing efficient e-marketplaces. Even more interesting, vertical communities are being developed by infomediaries instead of each individual firm within an industry as was done in the business-to-consumer e-commerce market.

The Chemical Industry

This section discusses the race to become the vertical community for the chemical industry. Most of the global chemical companies have a presence on the web. However, the vertical e-marketplaces discussed below are provided by infomediaries. A dozen or so firms are leading the race to the marketplace in the chemical industry. This section looks at four e-marketplaces: Chemconnect.com, Chemdex.com, Chematch.com, and E-Chemicals. Their strategies are diverse, but their purpose is to gain a share of the chemical industry market. The chemical industry is a multi-trillion dollar industry. More specifically, the petrochemical industry is a $1.3 trillion industry. Forrester Research predicts e-commerce within the U.S. petrochemical industry will jump from $4.7 billion in 1998 to $178.3 billion in 2003. The market- making mechanisms being used by these e-marketplaces are catalogs and exchanges. The type of chemical product they sell determines the market-making mechanism. The purchases are made in bulk and average around $200,000 per transaction. (Isaacs) The overview of the chemical industry's race to the marketplace sheds light into the potential size of these vertical marketplaces and how additional vertical breakdowns of the industry are possible.

Chemconnect.com was founded in 1995. It is a global chemical and plastics exchange for chemical and plastic manufacturers. Their exchange is called the World Chemical Exchange. The exchange allows buyers to make product requests, and it allows suppliers to make product offerings. The technology links the offering and requests via online accounts that are managed like e-mail accounts summarizing bids and offers from other members. Their web site can be viewed at www.ChemConnect.com. Buyers have two methods of buying: a search of offers and a product request. Sellers have two options also: a search of product requests and a product

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offering. The largest transaction as of December 03, 1999 was $3, 660,000, and the average transaction is around $194, 638. Revenue is generated by a percentage of the transaction and membership fees for participating in the e-marketplace.

Chemdex was founded in 1997. Chemdex.com provides an e-marketplace for the life sciences industry. Its target markets are life science enterprises, researchers, and suppliers. Chemdex uses a catalog market-making mechanism. Chemdex.com has two e-commerce solutions: Science360™ and LabPoint™. They currently have over 70 leading enterprises using them for life science solutions procurement. Some of their largest customers include Genentech, Rhône-Poulenc Rorer, and SmithKline Beecham.

Chematch.com is a direct competitor of Chemconnect.com. They also provide an exchange market-making mechanism for the buying and selling of bulk commodity chemicals, plastics and fuel products. They recently merged with PetroChem.net, a professional community for the petrochemical industry. This merger is significant because it begins the paradigm shift from an e-marketplace to a vertical community. PetroChem.net had over 7600 users prior to the merger. Chematch.com "promises to redefine the way the chemical industry conducts business" with this merger.

E-chemicals.com was founded in 1998. It uses IBM for its technology solution, Yellow Services for their logistics, and Sun Trust for their financial services. E-Chemicals uses an auction market-making mechanism. However, it remains a competitor of ChemConnect and CheMatch. E-chemicals' customers selected this site because of the anonymity rules. Anonymity protects the suppliers from being tied to confidential contracts that were revealed or discovered by suppliers. Suppliers do not want to be caught in a pricing war, because commodity pricing will deter a supplier from coming online. The market-making mechanism and anonymity differentiate E-chemicals from the ChemConnect and CheMatch. On the buyer side, anonymity reduces the

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level of trust in the order fulfillment process. E-chemicals Inc. puts its name on the line for trust in order fulfillment by only registering qualified members.

In such an enormous industry, specialization seems to provide room for multiple vertical infomediaries. Only time will tell if the chemical industry has room for dozens of vertical communities. Several major chemical companies such as Exxon are creating direct e-commerce models for buying and selling chemical products. Another possibility is that the marketing mechanisms and type of products handled will lead them into acquisitions of one another. However, the success of Chemdex and their specialization in the life sciences makes that possibility seem unlikely. The possibilities within a vertical community are just being explored. The same technology and solutions developers that brought the recent business-to-business e-commerce blitz will revolutionize the chemical industry repeatedly.

VerticalNet.com: A Horizontal Approach to Vertical Hubs

VerticalNet.com is a company whose strategy is to create a multitude of vertical infomediaries or industry portals. VerticalNet has acquired most of these vertical marketplaces based on a set of acquisition standards. They are becoming a model for vertical infomediaries being built. VerticalNet acts as an industry portal for relevant electronic storefronts. Their claim of having 40 plus vertical marketplaces is questionable since many are not even e-commerce enabled. One example of an online infomediary owned by VerticalNet is www.solidwasteonline.com. It provides news stories, product reviews and recommendations, and access to storefronts from hundreds of vendors. These storefronts cost $6,000 per year to host. They currently have a 90% renewal rate on storefronts. Although not all of their vertical infomediaries are vertical communities with sets of e-business solutions, VerticalNet has a formula for creating vertical e-marketplaces and wants to utilize that formula by owning some or all of their individual vertical infomediaries. Once a web site attracts enough buyers and sellers, a vertical marketplace can be established to enable e-commerce between the buyers and sellers. The e-marketplace will provide the revenue for creating and developing a vertical community.

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VerticalNet.com has created over 41 vertical communities. It holds a portfolio of vertical communities from 10 different industries.

- Advanced Technologies
- Communications
- Environmental
- Food and Packaging
- Food Service/Hospitality
- Healthcare Industries
- Manufacturing and Metals
- Process
- Science
- Service

These 10 different industries have even been subdivided like the chemical industry. For example, the communications industry is divided into digital broadcasting, fiber optics, photonics, and wireless. Most of the growth in VerticalNet has come from acquisitions of startup e-marketplaces. Although the company calls them vertical marketplaces, many of them are far from that, offering referral services or advertising. Perhaps the most interesting item about VerticalNet is their potential and the services section of the portfolio. VerticalNet may become the leader in vertical community development by developing integration technology for functional hubs, such as HR Hub.com and Property and Casualty.com. Functional hubs will have the greatest chance of standardization with VerticalNet's portfolio of communities than a functional hub would integrating with individual communities such as E-steel and PlasticsNet.com.

Final Thoughts

This horizontal integration strategy of vertical marketplaces might be the driving force that makes functional hubs the linkage between vertical hubs. Development of functional hub integration could be tested within the portfolio of vertical communities. A second item that stood out from the discussion on the chemical industry's set of vertical e-marketplaces and VerticalNet is that there is room for multiple vertical communities. A vertical community cannot be everything to an industry. Segmenting the industry and identifying characteristics of that segment will be the driving factor of success. This ability to segment the market is what makes business-to-business e-commerce more favorable than business-to-consumer transactions.

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Chapter 4:   The Role of Partnerships

Vertical marketplaces are infomediaries. Providing strategic partnerships with organizations or individuals that can feed the hub solutions, content, and participants is what adds value to the hub. Infomediaries do not invent the solutions, but bring it online to foster community. This means that partnerships must be formed to bring content, solutions, participants, and technology into the community. The strategic partnerships are what create the value in vertical community. There are five partnerships that are viewed as critical. Those five partnerships are listed below.

- ➡ Technology Partnerships
- ➡ Buyer Partnerships
- ➡ Supplier Partnerships
- ➡ Content Partnerships
- ➡ Financial Partnerships

The organizational structure of a vertical hub is unique. The partnerships and employees are organized around the hub. It is not in the shape of a pyramid like a traditional hierarchic organization, where information is fed up and down within the organization. With the exception of a small administrative department, a vertical company is comprised of marketing and an information technology team. The two teams are linked to one another by technical liaisons that integrate and implement partnerships into the centralized hub. Each partnership requires technical customization for the end-user. The marketing and sales team of a vertical hub is responsible for creating the buyer, supplier, and content partnerships. The technology team is responsible for forming technology partnerships and for implementing solutions and integrating partnerships into the vertical hub platform. These five partnerships are essential in the development of a vertical hub. See figure 1.1. Note the financial partnerships are not visible. Those partnerships provide funding behind the scenes and predominantly at startup.

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Figure 4.1: A Vertical Hub's Strategic Partnerships
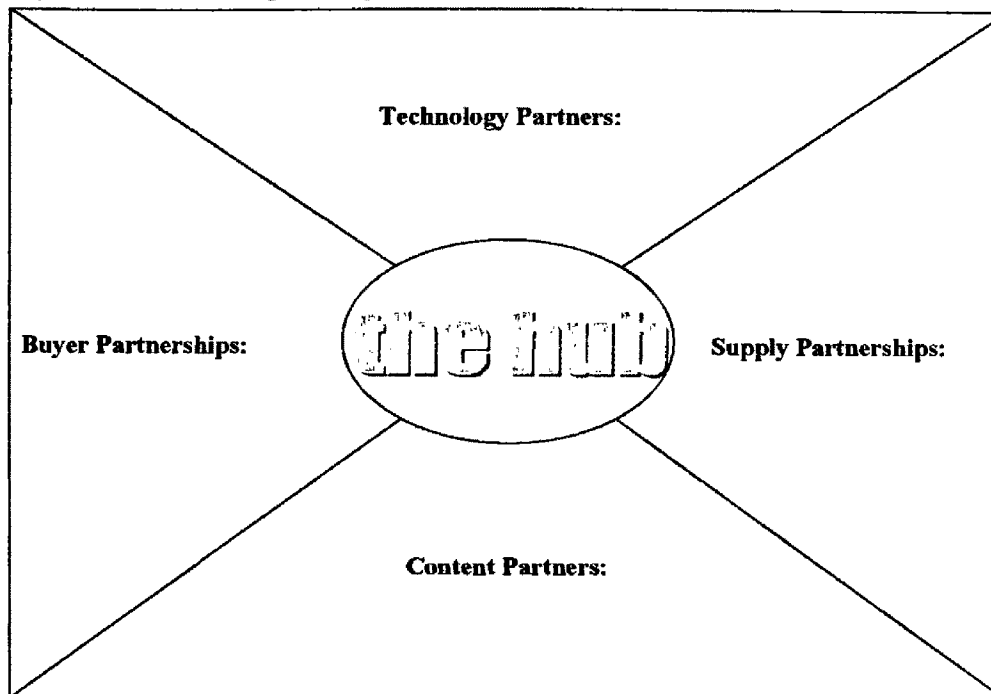
A vertical hub partners with providers of industry content and e-business solutions to foster community, rather than spending the time and resources to create the content and solutions themselves. The five critical partnerships comprised of technologies, buyers, suppliers, content, and financing should be established at the earliest stage of development to reduce integration complications. The first partnerships formed with buyers, suppliers and content partners are referred to as anchor tenants because they are the first ones being brought to the marketplace. No particular partnership is more important than the other; vertical hubs have started from every angle. The important thing is that it takes all five partnerships to create a vertical community. All partnerships should be pursued simultaneously. The following discussion looks at each of the five strategic partnerships and its role in feeding the vertical hub.

Technology Partnerships

The technology partnerships provide the connectivity, reliability, infrastructure, solutions and integration. The technology partners are the backbone of a vertical community. The Chief Information Officer (CIO) is the head of technology partnerships. The major components within the technology group include web hosting and connectivity, the platform, the solutions, and the tech team.

Web Hosting and Connectivity

Connectivity, reliability, and infrastructure fall into the web hosting and connectivity partnerships. Vertical communities are faced with a make versus buy decision in regard to web hosting and connectivity (PriceWaterhouseCoopers, 42-43). Because speed to market is critical in the race to create vertical communities, vertical communities often outsource web hosting to Internet Service Providers (ISP) or the selected e-commerce Application Service Provider (ASP). The initial cost outlay to acquire the office space, purchase a server and necessary hardware, and achieve high-speed connectivity to the Internet is not where startups want to initially invest their capital. Marketing and integration are the focus of capital investment.

Remember, the value in a vertical community comes from the partnerships, not the infrastructure. The infrastructure is a necessary but not sufficient component of the technology partnerships.

A hub can eventually bring these outsourced services in house if desired or when it becomes cost efficient. There are over 1,700 web-hosting companies in North America. The top four web-hosting companies are PowerSurge.net, WebHosting.com, LexiConn.com, and HostPro.net (www.hostindex.com). That number doesn't even include ASPs that are willing to host the hub. Four criteria to use when selecting a partner for web hosting and connectivity are traffic volume capacity, e-commerce specialization, access to the platform code, and miscellaneous services such as storage, back up, and fee structure. Outsourcing initially is recommended because it puts the burden of connectivity, reliability, and a majority of the infrastructure on a third party

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partnership. Tech team developers and integrators then interact virtually with the hub, making it much easier for buyer, supplier and content partners to be integrated from their respective locations.

Platforms

The choice of the operating system platform is extremely important. UNIX, NT, Linux, and Windows are a few platforms currently available. Most startup hubs will use an NT platform due to its ease of interfacing with e-commerce platforms, security features, popularity, and control. It is also a reliable platform for business purposes. It is becoming the most common platform used by technology firms. As a hub reaches enterprise proportions, it might be necessary to move to a UNIX (enterprise) platform. A necessary change in platforms can be made when the web hosting is brought in house.

The Solution (E-commerce Application Providers)

Most vertical communities purchase a prepackaged software application in order to create their e-marketplace. There are four types of merchant making mechanisms: catalogs, auctions, exchanges and barters. ASPs usually specialize in one type of market-making mechanism application. The business-to-business e-commerce movement is so new, that suites are not yet available. Commerce One, an e-commerce solution provider who sells a catalog market-making mechanism, is due to release an auction solution next year. Startup hubs should begin with only one market-making mechanism and e-commerce ASP. Trying to implement and integrate all three simultaneously complicates the development of the hub. The exchange market-making mechanism is most popular with vertical marketplaces because it has flexibility for both the buyers and suppliers. Buyers are able to customize their viewable selections for needed materials and repeat purchases; suppliers are able to offer their own catalogs and negotiate prices with particular buyers based on volume buying.

Technology Team

The CIO heads the technology team. The group is comprised of Webmasters, graphic artists, system integrators and customer service. Webmasters and graphic artists provide the front office solution via a web page. The web site is the front door of the hub. Webmasters create the web site by focusing on functionality and design. The graphic artist creates and manages the graphics within the web site and its catalogs, exchanges and auctions. The system integrators manage the back-office solutions and operations. This is where applications are integrated and transactions are recorded. The end-user of the hub never sees this area. System integrators integrate the hub's web site with buyer, supplier and content partner information systems (ERPs, databases, etc.). Customer service provides the link between end-users and system integrators when problems arise in the interaction between the hub and the end-user. Customer service is a 24-hour seven days a week job for e-commerce enabled Internet sites.

Buyer Partnerships

The web site of the hub is ultimately designed for the buyer because they are the end-user of the web site. Buyer partnerships are critical because they make the purchases that typically generate revenue for the hub. Buyers are often referred to as members because access to a vertical community requires customer (buyer) information for customization to the participant. Buyers typically fill out a credit like application online to gain access to the web site. Buyer partners that represent sizable buying groups with purchasing power provide substantial leverage for shifting their current suppliers to the online hub. For example, if particular suppliers are hesitant to move to an e-commerce platform, a partnership with a sizable buyer can set a policy to only buy from suppliers within the vertical community. This strategy will force the suppliers online because suppliers go where the buyers are located, particularly when it is a large piece of the suppliers business. As an e-marketplace becomes a vertical community, the term buyer is not appropriate since other functional users besides purchasing managers will access the web site. For this reason, buyer partners are often referred to as end-users or online participants.

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System integration is not as viable on the front-end side of e-commerce. Improvements in programming languages for web sites will allow better integration in the future. XML (extended hypertext mark-up language) is likely to make front-office integration a reality for buyers. XML is not just a display of text and graphics like HTML. XML allows the text on the web site to be fed into applications and be processed by the front-end-users' back-office applications.

Supplier Partnerships

Back-office integration is the key to successful supplier partnerships. The ordering process needs to be seamless. The acquisition and integration of a supplier partnership is far more complicated than a buyer partnership. Because of the desire for many suppliers to participate in e-commerce, revenues are often generated from the supplier. The additional sales channel for suppliers has a value. E-marketplace providers try to capitalize by collecting revenue through membership fees, integration fees, and/or a percentage of sales fee. Buyer membership fees have not been as successful. The bulk of work in establishing an e-marketplace comes on the back-end operations side. The initial integration of the hub with a suppliers information system is time consuming because of customization and integration requirements for streamlining the transaction process. Supplier tenants are often subsidized by hubs, which lowers prices to attract buyers. As market participation increases, the margins return for the suppliers. Suppliers within vertical communities offer industry-specific materials. Several of the ASPs include an e-marketplace for more common business-to-business purchases in their applications. This expands the scope of the supplier base to attract buyers.

Content Partners

Industry publications, industry news, non-transactional e-business solutions, industry organizations and referral services are content. These content partnerships are most often formed with industry publication providers, government agencies, industry organizations, and industry-specific application providers. Content is what keeps the end-user coming back to the hub for more than just one function. For example, business-to-consumer portals used free e-mail to attract return visits. For business-to-business portals, a similar strategy for stickiness is used.

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At PlasticsNet.com, content partnerships include free access to material safety data sheets; hubs often pay a fee for such information. On some occasions a hub might acquire a content partner and subsidize the purchase with e-marketplace revenues. A few vertical hubs have created their own content. This method requires an industry research team, which can be costly for a startup hub. A key factor in attaining content partners is that many web sites are simply brochureware. These web sites typically receive more attention with a respective vertical marketplace. The one thing to avoid with content partners is links. An e-marketplace does not want to lead end-users away from their web site. Embedded solutions and information is critical for creating a mass audience within the vertical community. Content partners often require extensive integration if the content is in a database outside of the control of the hub.

Financial Partnerships

The financial partnerships include investors, an ERP, and consulting services. The investors should be neutral to the industry because of the information being transferred across the hub. The financial partnerships are critical although they are not visible in figure 1.1; vertical hubs are costly to create. Sufficient revenue from operations often takes months to generate. Application Service Providers are looking for startups with budgets above $10 million. The e-commerce application itself runs nearly $500,000. The marketing, traveling, and integration costs take an enormous amount of funding. In the next chapter, the financial budget of E-railroad™.com will provide an idea of startup cost for a vertical community. Besides investing partners, financial partnerships often include an ERP provider and consulting services. These partnerships are responsible for verifying the transaction since business-to-business transactions are much larger than business-to-consumer transactions. Integration between a hub and a supplier's back-office systems requires enormous trust between the two parties. Auditors, ERPs and creditors oversee that process. In addition, neutrality of a vertical community is required. Large industry players will not be able to establish an e-marketplace that creates a conflict of interest. Confidential material is contained in back-office systems of both buyers and suppliers. All of the big five accounting firms have e-business consulting services to oversee e-commerce transactions. The

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ERP is essential for providing the financial link to participants. They guide the integration process of a participant's back-office software. PlasticsNet.com has a partnership with JD Edwards to provide back office integration with vertical community customers. It is nearly impossible to provide full integration since many hub participants have competing ERP's. The technology partnerships handle those. The consulting partner provides security and reliability expertise for auditing purposes. The financial transactions and neutrality of the vertical community must have verification from a third party for participants to feel assured of security.

Final Thoughts

It is easy to get caught in the chicken or the egg dilemma. The partnerships create the foundation and value of the vertical community because the platform and infrastructure alone do not. The platform and architecture are not core competencies of the vertical community and can easily be duplicated or purchased by competing vertical hubs. The integrated partnerships create the value.

These strategic partnerships are about relationships. The selection of these partners takes extensive research and analysis. Partnerships within any particular group should not be implemented simultaneously. Complications arising in a supplier partnership will ruin a buyer partnership. Failure to partner with the proper e-commerce solution can complicate supply chain management instead of simplifying it. End-users of a web site rarely return if the hub did not provide a solution to the user. Fulfillment becomes an enormous issue for the hub. If a supplier fails to meet the needs of a buyer, the complaints fall upon the hub because the hub created the partnership with the supplier. Content partnerships should provide added value. Advertising banners in a hub are rarely seen as content. Very few vertical hubs use banner advertising unless it is industry-specific, embedded within the hub's web site, and the hub generates a referral fee from the advertisement. Hubs want their participants to use the web site as a daily toolset. Financial partners are equally important. The upfront investment is enormous for vertical communities. Transaction security and verification are a must before any buyer or supplier will

allow integration with their back-office applications. Guidance on investment and the make versus buy decision is a must. Internet venture capitalists often provide a benefit much greater than capital: guidance.

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Chapter 5:   A Closing Conversation

E-marketplaces and their market-making mechanisms, although considered the newest e-business model, are rapidly being reclassified into new e-business models. Already, the emerging e-marketplace models of a few months ago have evolved into functional and vertical hubs. Internet technology has increased the pace at which changes occur (Caldwell). Those industry participants that embrace the change will achieve a competitive advantage. Online business-to-business transactions are projected to reach $1.3 trillion in 2003 according to Forrester Research (Cross, 320). Implementation of a business-to-business e-marketplace takes between 9 to 15 months. It is expected that this startup time will decrease with technology and increased interest by industry participants in vertical e-marketplaces. As this paper is being written, unknown developments in technology, business models, and communication are making this paper outdated based on an Internet time frame.

Hubs are the most undefined territory because most of these business-to-business communities are in their infancy as vertical e-marketplaces. Hubs began by streamlining procurement and the supply chain management process. However, there are hundreds of other processes that take place within any given industry that are yet to be streamlined or made electronic. E-marketplaces will diversify in order to create value and gain a competitive advantage. This diversification includes new sets of e-business solutions and industry content. E-marketplaces become hubs via diversification and growth. Functional hubs will diversify horizontally along a specific task. Vertical hubs will diversify by adding additional e-business solutions from proven functional hubs and by developing functional solutions themselves. Hubs will become more clearly categorized. Verticals do not diversify well as opposed to functional hubs. John Chambers, the CEO of Cisco Systems, states that a horizontal strategy always wins (Daly, 109). A vertical community brings those horizontal successes within one community. The best type of diversification is created by

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the scope in which the hub serves industry participants, vertically within the industry and horizontally (functionally) across the value chain.

Vertical hub success comes from domain-specific relationships and expertise guided by technology. Unlike business-to-consumer e-commerce transactions, vertical communities create two-way relationships that blossom with additional participants. It tests the validity of added value along an industry's value chain. It restructures, automates, out sources, simplifies, eliminates, reduces, simplifies, presents, and re-evaluates the value chain with information technology solutions at every level. It integrates both vertically and horizontally to form a community. That community should ultimately become the daily toolkit for conducting business within the industry its serves.

Strategies used by companies such as VerticalNet.com will be tested overtime. Expect that new categories of hubs will be created and that current hubs will be acquired by competitors, molded into stronger vertical communities, and/or fail. Content will be complimented with additional e-business solutions such as customer service, payment technologies, application service providers, and front-office integration. This streamlining will redesign the corporate structure. The outsourcing trends and staff reductions within an organization will become realities of a vertical communities development within an industry. Functional hubs will be flexible across vertical communities, serving as the back-office applications for vertical hubs.

The race to the marketplace is just beginning. For the last few years, industries have had to concentrate on Y2K issues, limiting the implementation of Internet technology. A recent conversation between a CIO and purchasing manager verified this statement when the CIO said, "I want to talk to you about electronic procurement". The date was January 7th, 2000, immediately following Y2K. Hundreds of marketplaces are being introduced in the new millennium according to the hundreds of Internet articles read during the research for this paper. Market dominance will be established by several vertical communities, and segmentation of an

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industry will continue to occur because of market niches yet to be discovered. The broad stream strategies will be tested.

Strategic partnerships will play out. The leading solution providers will become apparent and their applications will become suites of market-making mechanisms and templates for vertical communities. Small e-commerce software developers will reduce the cost of startup. The technology sector will always be changing. Web hosting and connectivity will become a less important factor with increasing bandwidth, lower prices on hardware, and household connectivity (Taptich).

The benefits of vertical communities are reduced search costs, reduced information transfer costs, standardized systems, improvements in matching for buyers and sellers, reduced redundancy in information technology solution development across organizations, and the creation of synergy within an industry. Not all industries are candidates for vertical communities, but nearly all business-to-business tasks are candidates for electronic streamlining.

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Glossary

auction: Market-making mechanism used to create an electronic marketplace that allows buyers or sellers the opportunity to name their price.

back-office: Information systems used by an enterprise that are not available to the customer, such as an organizations accounting system, price lists, and employee records. These solutions are typically part of an enterprise resource planning application.

barter: Market-making mechanism used to create an electronic marketplaces but uses some other means of fulfillment besides money.

catalog: Market-making mechanism used to create an electronic marketplace that brings suppliers products' and services' together within an online database for buyers to search and make purchases.

community: A centralized gathering point based on functionality or an industry. Synonym for the term hub.

e-business: Any sort of electronic solution or set of electronic solutions used in business an available over the Internet. Also, a business on the Internet providing or performing any of the above functions.

e-commerce: An electronic financial transaction.

e-marketplaces: A group of buyers and sellers that conduct transactions openly and freely online.

ERP: Enterprise Resource Planning system. The software system that runs behind the scenes to record and manage an organizations transactions and resources.

exchange: Market-making mechanism used to create an electronic marketplace that allows buyers and sellers the opportunity to negotiate short term contracts.

front-office: The customers electronic perspective of an organization. This is often a web page focused on sales and marketing.

functional: Task specific.

hub: A centralized gathering point based on functionality or an industry.

infomediary: Information intermediary that brings buyers and supplier together to form the community.

integration: The process of linking two information systems together to run seamlessly.

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market-making mechanisms: Various models used to create electronic marketplaces.

solutions: A electronic version of a traditional transaction or function.

vertical: Industry-specific.

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