

# Convergence of Peer-2-Peer Computing (P2P) and Business-2-Business (B2B)

## 'New Economy' Business Models

A Brief on the Evolving Business Models that are shaping the New Economy, and how aspects of Peer-to-Peer Computing will impact those business models.

By Andrew G. White  
Logility, Inc.  
[awhite@logility.com](mailto:awhite@logility.com)

### Introduction

With the apparent loss in favor experienced by the Net Market phenomena, several thought leaders have suggested that the wind in the sails of the New Economy has all but run out. It would seem that there were just too many Net Market businesses with flawed business models. But what do we mean by "flawed"? There was so much support for the apparent benefits that centralizing Net Markets were to deliver—so where did they go? Separately, a recent resurgence in a small technology segment, known as Peer-to-Peer Computing (P2P) has heated up in terms of interest. If you read the press you will have noted that a few of the visionaries from "Round 1" have either cashed out of their net market initiatives or moved to new P2P technology providers. Is this a clue as to what the next big thing is? Is this recognition that the centralizing business model associated with the Net Markets (or Fat Butterfly, where one wing represents the buyers, and the other the sellers) is not the end game, merely a stepping stone to it? This paper will help explain one example of how this new P2P technology is converging with B2B to bring about the real change that was heralded but two years ago.

### Business Model Overview

When most experts talk about the structure of new business, they talk about the evolution companies have gone through in terms of attracting and conducting business. Some of these are associated with net markets. Most experts discuss business models such as:

- One-to-One, or Point-to-Point
- One-to-Many, or hub and spoke
- Many-to-Many, or (centralized, Fat Butterfly) hub
- Peer-to-Peer (P2P)
- *Private* versus *Public* Business Processes

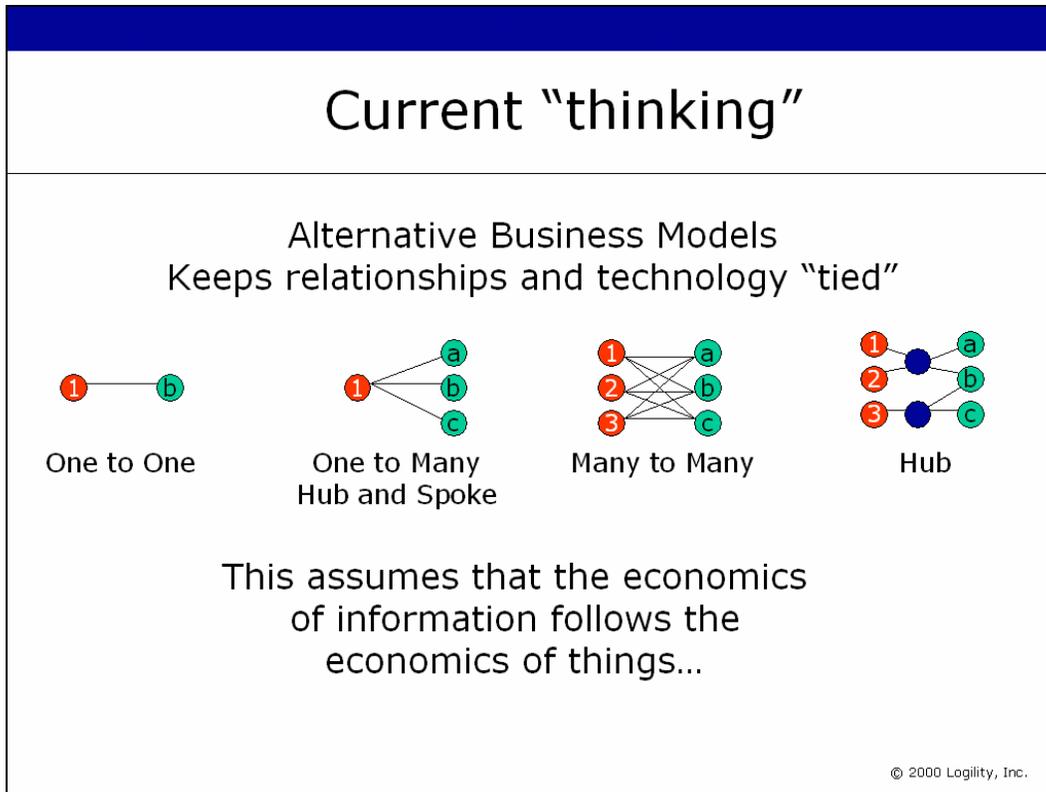


Figure 1: Current thinking limits understanding and opportunity that now exist in e-Business.

These simple terms are generally described as follows.

1. **One-to-One** (Internet-enabled Electronic Data Interchange, or e-EDI)

This model is an outgrowth of the pre-Internet era and often elicits a review of Electronic Data Interchange (EDI). Yet even if EDI were not considered, this model still fits the Old Economy, since it refers to the series of point-to-point relationships between companies. In the past, each company (buyer or seller) treated each partner as a discrete entity and all communications and processes were modeled accordingly. Note that in the Old Economy, there was little room for real B2B processes—all processes took place behind the company's firewall. EDI was not a B2B process; it was B2B transactions.

2. **One-to-Many** (e-procurement for buy-side or e-marketing for sell-side focus)

One-to-Many (hub and spoke) is typically discussed in the context of e-Procurement from a buyers perspective, or e-Catalog and demand aggregation from the sellers perspective. This model is generally applied to indirect materials—office suppliers, furniture, healthcare, insurance, and so on, that businesses need in order to operate. The advantage for the buyer is that several other even competing buyers can combine their purchase requirements to increase supply chain efficiencies—accomplished through more economical purchases (higher volume equals greater

leverage equals lower unit price). From the supplier's side, the chief benefit is the potential for increasing revenue by participating in an environment that provides efficient access to more buyers than before. The costs of "finding each other" are lower than in the Old Economy. These "finding costs" are what economists call "transaction costs". However, it is unclear if greater access to new customers offsets the loss due to price/margin erosion. The process may start as an anonymous one-to-many model, but the transaction itself results in a one-to-one model: one buyer transacting with one seller.

To facilitate the coming together of buyers and sellers, a virtual marketplace is needed: the Net Market. This implies an infomediary or intermediary—whichever is applicable. For a Net Market to exist, it must eventually generate profit. There must be sufficient business activity, so that the provider can make a living through "taxing" the business transacted. Many people consider that they could tax the transaction itself. However, since transaction management and control is a fundamental element of Enterprise Resource Planning (ERP), and is a fundamental building block of many software and service providers, this is a highly replicable service. Hence there we all saw a dramatic fall off in the actual fees made on such business. If the Net Market is unable to attract sufficient buyers and sellers, the service will not gain critical mass sufficient to generate any reasonable revenue. It will collapse—not unlike a house made of cards.

### 3. **Many-to-Many** (e-Markets or Net Markets)

This model is a natural extension to the previous one. Here, the process focuses on how buyers and sellers find each other—or in New Economy speak, Net Markets. In essence, Trading Exchanges evolved to Net Markets. These are the processes that precede the transaction, and include RFP/RFO and auction or reverse/auction models. In an anonymous manner, a prospective buyer posts to a market a desired requirement. The posting may be a simple "order", or may include some engineer-to-order or make-to-order elements such as product specification or certification requirements. Through a powerful rules-based process, suppliers are interrogated and ranked and then presented to the buyer for review. Price figures heavily, although recently most Net Market providers have purported to add some workable variables such as vendor performance, conformance and reliability metrics. Generally, the whole process up to this point is anonymous.

There are two deployments of Many-to-Many. One extends beyond the hub and spoke model where the centralized hub (Net Market) supports an open, Many-to-Many process. The best example here might be an auction (or reverse auction). This needs low or zero barriers to entry. Further, no buyer or seller must be able to impact the price. This model works best under perfect competition. It is the quintessential "Trading Exchange". However, the model really does not support a win/win for buyer and seller when it comes to direct material procurement. It is a reasonable model that should succeed when it comes to commodity products/services or those with many sources of supply and/or demand. In other words, indirect material procurement.

Centralized hubs are most efficient when the process being supported is open. This means that buyers and sellers can join and leave easily and at virtually zero cost. The can be likened to a "dating service" in comparison to a marriage! It helps buyers and sellers to "find each other" more efficiently than any previous model. But this again is still a cost cutting or transaction cost cutting effort. It does not, of

itself, “change the transaction and hence the relationship between buyer and seller”. After all, a ‘Request For Quote’ (RFQ) is still an RFQ – even if it is send or presented over the Internet.

Before we talk about how this hub supports private and public business processes, we first need to describe the peer-to-peer model.

#### 4. Peer-to-Peer

This model is very different from Point-to-Point. In Point-to-Point, the connections are like closed tunnels. Each tunnel is independent of the others. It may or may not have been the case, that the same tunnel (read “standard”) was used. If EDI was adopted, then the tunnels were similar although not always identical. Separately, the tunnels were used to send and receive documents that were maintained behind the firewall. They were static document or statements of intention (read “Purchase Order”). There was no mention or ability to be collaborative in a Point-to-Ppoint model.

Peer-to-Peer is what some have called the “Napsterisation of the supply chain”. So what is Napster and why does it impact B2B? Napster is an Internet-based file sharing service. It allows peer computers to share and trade music files over the Internet. Users of the service search for a particular song. The local client communicates with remote machines to seek out other clients (that act as servers) that store files to be shared. A user may search for a particular file, and download it directly.

This technology (ask your teenage child for information on what Napster is!) does not need a centralized server at all, although Napster itself does. Newer file sharing services provide the same level of functionality as Napster, but have no centralizing file directory. Napster was however the popular service that brought P2P to the public forefront. Each peer operates independently. Files on one peer are secured from preying eyes of companies that you do not want to do business with. File formats are standardized digital music as MPS. Files are interchanged between trading partners on a push or pull bases – as needed. No middle service is needed to facilitate the flow of documents.

An additional service of Napster is provided when you find someone who appears to have similar tastes to your own. If you are searching for a hard-to-find song, you can add that remote machine to your “buddy list”, subscribing to that machine as perpetual “look up”. You can then review ALL the hosted songs on that other machine.

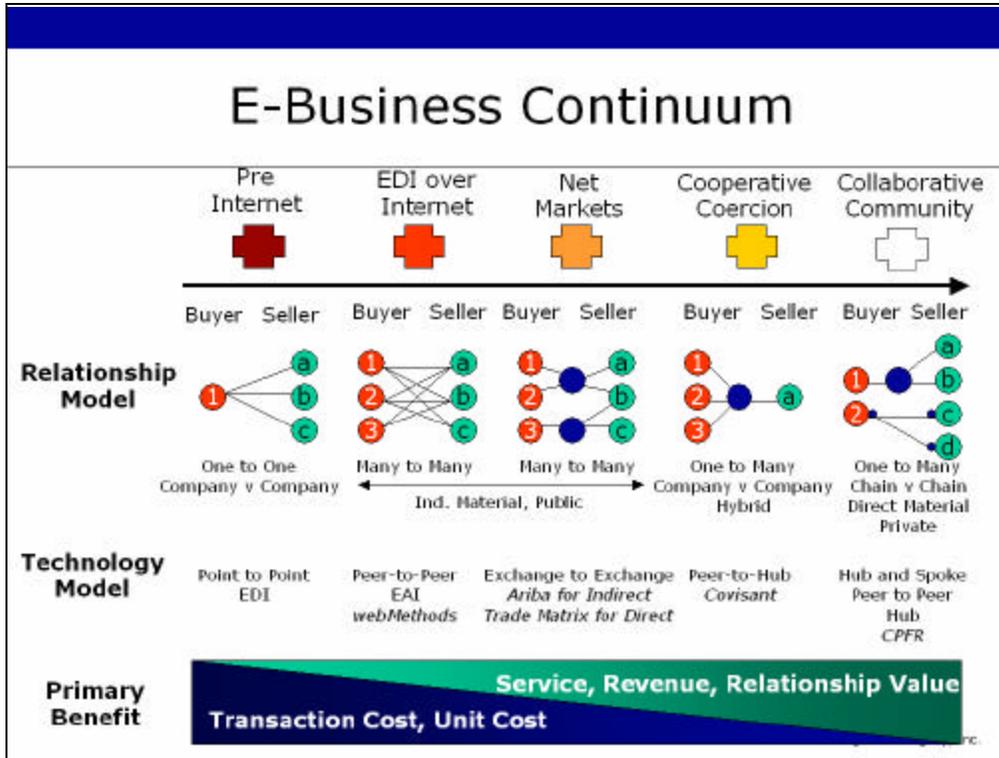


Figure 2: Comparing different Business Models in the e-Business Continuum

In B2B, this could be shattering. This could undermine the whole hub/Net Market Model. The issue boils down to a simple question that all business leaders need to ask themselves:

Where is it more *efficient* and *effective* to “do” each business process?

When we say *efficiency* here, we refer transactions costs associated with a business transaction. i.e. the costs incurred by buyer and/or seller in building up to a transaction (finding each other). When we say *effectiveness* here, we are referring to any process that most would describe as innovative, or disruptive in that they make current processes redundant and provide unique, even sustainable, competitive advantage.

Take an example. Let’s assume we are talking about a business process called “x”. In the question above, efficient means cost cutting – so “where” is it cheapest to do “x”? Would it be more profitable to offer “x” as a service? Is “x” best served when it is shared as a public good would be in economic terms or is it a unique business process offering some perhaps unique competitive aspects?

The characteristics of the “x’s” that lend themselves to centralized, hub-based or Net Market models include:

- Highly fragmented markets, with many buyers and sellers
- Few if any buyers or sellers that can influence price (monopsony)
- Few if any suppliers that can influence supply (monopoly)

Business processes that have a tendency toward commoditization, such as those related to Enterprise Resource Planning (ERP) will attract very low profits due to the pressure on margins as other companies can quickly replicate the service offering. Therefore any net market must offer such processes in the most transparent and frictionless manner possible. This means charging razor thin fees. This is what has been seen over the last 18 months. This is basically why public, centralized Net Markets have all rushed to offer high value-add services such as collaboration and CPFR.

But collaboration is a private business process. And that leads us to our next and last item.

**5. Private versus Public Business Processes**

This is in fact another way to look at the connection points between buyers and sellers. Ultimately, all business comes down to a specific transaction between two people; a Point-to-Point event. The transaction itself and the supporting processes can be public or private. Public makes sense when processes need to attract participants (such as an RFQ/RFP, auctions etc.) whereas some processes need privacy (collaboration on a business plan, fulfillment strategies, etc.) The point is that each of the previous models can and should support both public and private processes.

This explains why Net Markets have evolved to support private functionality. In 1999, a White Paper that I produced \* shows the different value propositions that both private (collaboration) and public (exchange) models provide:

| Collaborative Communities  | vs. | Trading Exchanges   |
|--|-----|---|
| <ul style="list-style-type: none"> <li>• Private, 1 to M</li> <li>• Price is not primary driver</li> <li>• Products are branded or differentiated</li> <li>• Fulfillment is competitive weapon</li> <li>• Revenue/Service Increase</li> <li>• Discontinuous innovation, integrating <i>new</i> business processes</li> <li>• Exception based</li> <li>• B2B Exclusive</li> </ul> |     | <ul style="list-style-type: none"> <li>• Public, M to M</li> <li>• Price is key decision factor</li> <li>• Products are not differentiated</li> <li>• Fulfillment is homogenous</li> <li>• Transaction Cost Reduction</li> <li>• Continuous innovation, automating old business processes</li> <li>• Self-service based</li> <li>• B2C and B2B</li> </ul> |

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Figure 3: Characteristics and value proposition focus of public and private net market models

\* *The Rise and Fall of the Trading Exchange*, Andrew White, Logility, Inc., 1999.

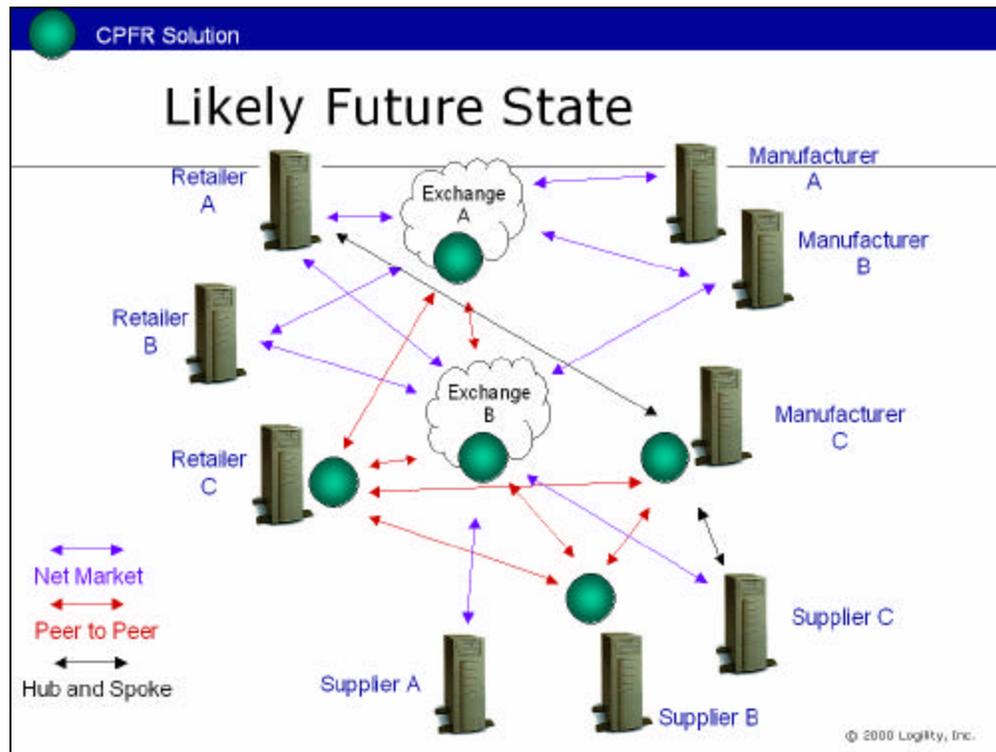
## Convergence of P2P and B2B: New Economy Business Models

Today, the race is on to show significant value-add in terms of optimization and collaboration in the net market space. This is a centralized hub offering both private and public services. In Geoffrey Moore's book *Living on the Fault Line*, he talks about "core versus context". Core represents those things that are central to your organization and directly impact competitive advantage; context represents those things that are supplemental to your organization. People often talk about domain expertise – this is another way to view what is core. Moore recommends that companies reduce investment in, or 'outsource', context operations and increase investment, or 'insource', core operations. Worse, he foretells that over time, all core operations tend to become context. This is analogous to what I mentioned above that ERP business processes will tend toward commoditization. This means that as a growing organization, you fill out your internal processes with context operations and what was once core "gets lost" or becomes context as other organization replicate it.

We should therefore conclude that we should outsource indirect material procurement and insource direct material procurement. Logically, and until the value can be superceded by a better model, we should therefore:

- Move indirect material procurement to the (public) Net Market service provider, and
- Keep (private) strategic, collaborative processes within our own organization.

The private portal or exchange model could be deployed via a hub-and-spoke model or a P2P model that "insulates" the connections and integration points between what would have historically been proprietary platforms. As explained above, the P2P model is far superior: it is open, flexible, does not replicate the data and can still maintain security and resilience in the face of wide network failure.



## Convergence of P2P and B2B: New Economy Business Models

*Figure 4: Likely future state for many industry segments will include several Net Markets or Exchanges, several Hub-and-Spoke and Peer-to-Peer connections. This is being observed in the Consumer Goods value chain and the high tech electronics segments already. The automotive segment is stifled at this time by the promise of RosettaNet.*

Figure 4 also introduces the concept of Exchange-to-Exchange, or X2X. This is the scenario where two possibly competing Net Markets will have to trade business documents, or even collaborate! In essence, for collaboration and CPFR specifically, Peer-to-Peer integration will be identical to Exchange to Exchange. The same business document, when standardized, can be traded between trading partners as well as Net Markets.

Today, however, we are seeing a game being played out where public net markets are fighting for ownership of the collaborative processes between organizations. I recently heard the CEO of a very large net market in the consumer goods market suggest that his ex employer was a major partner in that net market for the sole purpose of "beating up the apparent heir to that (vertical) supply chain". In other words, they were sleeping with the lesser of two enemies! This very large retailer was getting into bed with smaller retailers in order to leverage each other's assets in attempting a coup over the current dominant leader. The idea being that no company will join a net market if it a) they perceive they have an advantage over their enemy, or b) they net market itself will not, in their opinion, change the competitive landscape. If the net market is perceived as a threatening model to the current competitive ladder, companies (both buyers and sellers) will defect in and out dynamically until another status quo is achieved. The bad news for managers is that the duration of any new status quo now is significantly reduced.

This discussion of whether a company should be involved in a trading exchange or not is bound up with Darwinian selection: if the value is perceived to impact the status quo of the pecking order (the perceived ladder on which brands and companies are ranked by customers and managers), then large companies will participate! Wal\*Mart will join a trading exchange if they perceived that such a grouping of competitors could harm them.

Weaknesses of the P2P model lie in the prerequisites. With Napster, I can make available for download a song that I recorded. However, what if that original CD was scratched and therefore the sharable MP3 file reflects that poor quality recording? Then users who download my poor quality recording will get that same poor quality recording. There is no policing authority to verify that the songs are of a certain quality. I could, if I wanted to, mislabel the song and upset a lot of people! If you were seeking to download a Burt Bacharach track and you ended up with a Britney Spears track, someone would be upset!

Lastly, MP3 is the format in which songs are maintained. MP3 is nothing other than a document format. For example, MP3 might be the equivalent to a specific EDI document, or XML document. Clearly, this demonstrates the complexity in B2B – there are numerous document formats, messages and new one's are being created every day. So if MP3 is like EDI, we need an XML version of MP3 that is extensible and self-defining. That is where efforts like SOAP and UDDI will help.

Applying these Napster issues to B2B is simple: we need standards to ensure that all members of a given network have the same format of document. Then, we have to ensure security and compliance to the format. Though the format itself is

proprietary in relation to Napster, there is no assumption that the document format in B2B should be likewise.

### **Summary**

Most efforts to date in the B2B space have focused on visibility and velocity – providing access to trading partner data. The most popular are those that relate to order status and inventory availability. Additional efforts have sought to speed up current business processes, such as RFP/RFQ, Auction, and so on. Many of these efforts have and will continue to save many millions of dollars. However, the common thread is that they are unit-cost or transaction-cost reduction programs. Collaboration is a model that delivers on cost-cutting processes as well as delivering revenue-increasing opportunities. True collaboration is what companies seek to develop in their core business processes.

The different deployment models of B2B are still in a state of flux. What was assumed to be “the” model last year is now just one of many. However, it is likely that centralized agents best serve some business processes that are public in nature – or net markets. It is also clear that other business processes that are private in nature are better served through Peer-to-Peer models. It will take time to prove this model, as there is still much to do in the software industry. Few vendors have any technology that is truly Peer-to-Peer. After all, this is not like we are simply gluing together buyer and seller ERP! That is a possible route, but one that will not change the competitive landscape. And that glue will not survive the onslaught that will surely come from the P2P-based collaborators!

Centralizing Net Markets, or Fat Butterflies, as they are sometimes referred to, are no longer the end game. Finally most analysts through experiences or reasoning have seen that these monolithic models are suitable for certain types of products and services. The more valuable materials will be planned and replenishment through a series of proprietary, P2P networks. These networks will self-organize around company and strategic alignment. They will compete against each other. Several companies will defect from one to the other, thus extending the delivery and realization of interoperability of what was originally seen as competing standards. The result will be a series of P2P and Fat Butterflies, not unlike Figure 4 above. The question for me does not concern the value of collaboration, but suggests a Darwinian comparison with the general use of P2P for other direct material business processes. The race is on to define them and make money on them. For my part, CPFR and Collaborative Commerce is enough. It is and will be seen to be the lion share of the new economy

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