

MetalSpectrum: A Virtual Marketplace For Brick-and-Mortar Products

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ABSTRACT

This case study describes the sequence of events that led to the establishment of MetalSpectrum, a digital marketplace for the exchange of non-ferrous metals. Compared to the historical establishment of the London Metal Exchange, MetalSpectrum was created for the purpose of redefining the way non-ferrous metals were bought and sold. The case study examines how established companies seek to respond to the threat imposed by disruptive technologies like the Internet. Also critical success factor underlying the success of the Internet venture are discussed in the context of the period marked by the Internet frenzy of 1999-2001.

Keywords: B2B, e-commerce, digital marketplace, dot com

1. CASE SUMMARY

The purpose of this case is to introduce students to the area of business-to-business (B2B) e-commerce – particularly, digital marketplaces. This is an important area of study since all organizations will have to decide how they will operate in the new digital marketplaces that will develop – whether by building a private or public trading exchange, joining a consortium, or simply deciding which marketplace to partner with in its industry. This case focuses on the creation of a high-profile digital marketplace in the nonferrous metals industry called MetalSpectrum. The case allows a detailed discussion of the reasons driving the creation of digital marketplaces, the IT infrastructure required to support them, and the competitive and organizational challenges that must be overcome for them to be successful. The case also provides a fascinating look into the Internet frenzy that gripped corporate America during the 1999-2001 timeframe. The fact that Fortune 100 companies could feel threatened by Internet startups provides the backdrop for a discussion on how established companies decide to address the challenges brought about by disruptive technologies, like the Internet. The case allows an examination of the options available to an organization when the assumptions underlying a business model turn out to be wrong. Finally, the case provides the context in which to discuss the future of digital marketplaces and to speculate on how they may develop in the future.

2. INTRODUCTION

Early November 2000 in a conference room at the MetalSpectrum headquarters in Atlanta, Georgia, Eric Bassel, Vice-President of Operations, reflected on how far the company had come in such a short period of time. MetalSpectrum was a B2B digital marketplace formed by a consortium of eight major players in the non-ferrous metal industry to buy and sell copper, aluminum, nickel, lead, zinc and tin. In less than six months, the company had achieved significant milestones in 2000: a May 2nd press release announcing the formation of the consortium; the hiring of the first employees in June; the soft launch of the Web site on September 12; and the full launch of the first version of the digital marketplace on October 16. Bassel, a former employee of Alcoa, the world's leading producer of aluminum, first proposed the idea of the digital marketplace and was involved with the creation of MetalSpectrum from the very beginning. Although MetalSpectrum was proceeding on schedule, Bassel knew that many uncertainties existed. Would a merger with a major competitive B2B site make sense? What was the appropriate fee structure for participants in the marketplace? Was the marketplace responding to e-commerce as quickly as needed to prove the concept valid and thus keep the support of the consortium partners? Would the partners stay the course if MetalSpectrum didn't hit its revenue numbers and needed more cash?

3. BEGINNING OF THE IDEA

By the spring of 1999, senior executives at Alcoa were aware of the changes that were being brought about by the Internet. One hundred twenty-five years ago, when the London Metal Exchange came into being, some of the metal producers were slow to respond to the changes created by this revolutionary way to buy and sell products. Alcoa didn't want the same thing to happen again. Already, two US-based digital markets had been established to buy and sell steel, namely MetalSite⁴ and e-STEEL⁵, and a third, Metique, which was based in the United Kingdom. As a result, a team consisting of fifteen Alcoa employees and consultants from Boston Consulting Group was formed to develop an e-strategy for Alcoa. This group was led by the president of the e-business group at Alcoa. At a meeting in November 1999, in a crowded room at Chicago O'Hare airport, the team identified 25 possible e-business initiatives. By March 2000, the concept of a consortium-owned, multi-metal marketplace had emerged as a major investment opportunity for the Alcoa e-business group -- the one that the group believed had the most potential to develop into a viable business and the one that would bring the most value to the entire industry. Bassel commented on how Alcoa came to this conclusion:

"If Alcoa is going to build and operate only alcoa.com, then all their competitors are going to build their own sites. Buyers will have to integrate into each separate site. The industry will have a new tool called the Internet, but the industry will continue to have to deal with the same integration issues that it has with EDI today. If this is the way it develops, it will be really sad for the industry. We will be no further along than before we had the Internet and the industry will not be getting the savings that it needs. We all believe that there is value to be created in this industry by working together. If we can do something for the industry that allows us to pass efficiency savings on the customer, everyone wins."

A Boston Consulting Group team member remarked:

"If suppliers in the metals industry could make e-commerce go away, they would. But absent the ability to do that, creating a supplier-based consortium was a good hedge against the emergence of a powerful e-commerce intermediary arising. For that reason, Alcoa

⁴ MetalSite, established in 1997, was the first virtual auction site for selling steel. Producers would post their inventories for auction and pay the site a small percentage of the transaction value. Founded by Weirton Steel Corporation, it is owned by steel producers.

⁵ e-Steel emerged as a competitor to MetalSite in 1999. Based in New York and backed by venture capitalists, the new e-marketplace was launched as a neutral site where sellers and buyers could negotiate deals for steel in private.

took the lead in creating this consortium. They set money aside to pay for the feasibility study and funded a group of people to start pursuing the establishment of the consortium. We put together a business model for the consortium that was very simple. I don't think you can invest a whole lot of time making very complex predictions about a future that none of us had any clue as to how it would play out."

4. SELLING THE CONCEPT

Once it had been decided that the digital marketplace had to include more companies than just Alcoa and more metals than aluminum, Kim Fields, a Boston Consulting Group employee at the time and now Vice President for Business Development at MetalSpectrum, was given the responsibility to identify and sign up other suppliers to be members of the consortium. The choice of suppliers in turn would be influenced by the metal markets to be represented in the digital marketplace. It was decided to focus on those metals that customers buy day in and day out – copper, stainless, brass, titanium, and nickel. The top five suppliers within each metal, along with a distributor, were identified and Fields set out to convince them to join the consortium. Fields explains how she sold the concept:

"When we began to talk to potential partners in March 2000, e-commerce was just starting to get on people's radar. Everyone knew that they would have to make a decision on how they were going to participate in these emerging digital marketplaces or risk being left behind. I pointed out to them that their customers already had some choices for buying on-line that had been created by third parties (i.e., MetalSite and e-STEEL.) I asked them if they wanted a powerful third party to stand between them and their customers and to dictate the terms by which they would interact with them. By joining MetalSpectrum, they would have an opportunity to have some say in this inevitable change. Otherwise, they would have to play by whatever rules were set up. If they believed that there was a chance that at least one of these digital marketplaces would succeed, it would be better to play, than to not play; it would be better to own part of it than to not own part of it; and on the margin, they would both help it succeed and help it be more balanced in how it represents both buyers and sellers."

Based on this argument, Fields was able to convince eight metal producers and distributors to join as partners in the consortium. Partners were either founders or charter members. Founders were offered equity and a board seat. Charter members were only offered equity. The distribution of equity was based primarily on the initial contribution of resources (both capital and manpower) to the construction of the site. In addition, a pool of variable equity was set-aside to be earned through active

participation in the digital marketplace. About twenty percent of MetalSpectrum's equity was reserved for the company's employees. Caps on the equity were put in place in order to ensure that no one partner would have a majority share.

A key concern expressed by potential partners was their ability to maintain their brand and prevent commoditization of their products if they were sold on the digital marketplace. No one, including Alcoa, wanted to compete just on the basis of cost. Fields commented on how she addressed this problem with potential partners:

"I pointed out to them that MetalSpectrum is just another channel to your customers – one where people are buying multiple metals and finding value in getting all of their purchases at one site. Within MetalSpectrum, you still have to compete on quality and on-time delivery because those are the things that really matter."

Another contentious issue involved exclusivity. Each partner was required to agree to only participate in the MetalSpectrum digital marketplace. No one wanted to agree to that, including Alcoa. However, in order to build sufficient liquidity to support the marketplace, it was critical that all partners direct their business to this one site.

5. GETTING STARTED

In the beginning, the Board of Directors drawn from the initial group of eight partners was very active in the business – meeting every two weeks and making all day-to-day operating decisions for the consortium. In addition to cash, each partner was required to commit high-level employees who had the specific skills necessary to get the new company up and running. Included in this group were chief technology officers, vice-presidents of business development, and directors of sales and marketing. All together, there were approximately 60 people assigned from the member organizations to the start-up phase.

During the last week of April 2000, the group met to choose the name of the company (MetalSpectrum), to decide on where the headquarters was to be located (Atlanta), approve a logo, select a technology partner (Ariba and I2), and approve the press release that was distributed on May 2, 2000 announcing the formation of the company. On June 1, 2000, the first MetalSpectrum employee was hired. During the second through the fourteenth day of June, the governance issues for MetalSpectrum were resolved and member agreements signed. On June 14, 2000, MetalSpectrum was incorporated. The members committed funding for one year. By November 2000, the members included: Alcoa, Allegheny Technologies, Castle Metals, Chase Copper & Brass, Kaiser Aluminum, North American Stainless, Olin Copper & Brass, Pechiney Aluminum, Outokumpu Copper & Brass, Reynolds Aluminum, Thyssen/Mexinox, TW Metals, and Vincent Metal Goods. There were 70 MetalSpectrum employees.

6. THE BUSINESS MODEL

The MetalSpectrum offerings were standard, non-ferrous metals that customers buy on a daily basis. There were no major competitors in that market space in 2000. Furthermore, the market for non-ferrous materials was highly concentrated, consisting of only a few very large suppliers of aluminum, copper, and stainless steel. This meant that liquidity would be relatively easy to achieve and the shelves for the full product line could be filled very quickly.

The value proposition for the members was built around the equity given to them, the increased liquidity of the metals, the cost reductions that were possible by reducing supply-chain transaction costs, and the fact that all of the buyers and sellers would be in one place. Although the members received the lion's share of the value proposition by holding equity in the company, the revenue model required that members pay for all transactions, with the exception of auctions, which required buyers to pay. In the beginning, the pricing system was very simple. Sellers were charged a fixed percentage of the transaction amount. However, after learning how the members sold their products, it became clear that this simple approach would not work. The amount of the transaction fee needed to be based on the specific type of metal traded and the volume of trades transacted. For buyers, the fee needed to be based on the type of auction.

It was estimated that the market for metals in the United States was somewhere in the order of a hundred billion dollars and that between 25 and 50 percent of that would go online in the next five years. Assuming that MetalSpectrum could capture one percent of that market, there was a five hundred million dollar potential opportunity. With a 1% fee, the potential revenue was 5 million dollars. Bassel remarked:

"We initially thought that we would charge each member one percent of the dollar volume that each generated on the Web site up to a maximum amount. That drew tremendous fire from the members. They did not like being charged. They thought that the pricing policy was unfair since it cut into their profit margin. Even though the members have an investment in this company and want a return on their investment, the purpose of their participation is to generate their own revenues and see an increased sales volume -- not to have their profit margin cut by giving us a full percent of the transaction dollar amount."

MetalSpectrum was in the process of reevaluating how to generate revenues on the site. Should they charge the partners a percentage of each transaction, a subscription fee, or flat fee per transaction? How could the pricing be set so that the suppliers would know how much it actually cost them to do business on the site?

Complicating the pricing decision was another factor. When a supplier decides to invest in MetalSpectrum, it is the corporate office that makes the investment. However, it is an individual business unit that winds up paying for the cost of selling product on the Web site. Fields remarked on this mismatch:

"I'd sit there with an executive from an individual business unit saying, "These are not high fees and your company has got the equity." They would come back and say, "You've got to lower your fees, because the fees are coming out of my budget. The investment was made by corporate. I don't care if this equity is worth five hundred million dollars right now. I am the one paying one percent on my sales volume. I don't want to do that."

By November 2000, MetalSpectrum had close to eighty registered companies doing business on the Web site and close to \$900,000 worth of metal sales had gone through the site. Their goal was to have five thousand companies registered by the end of the 2001. Their long-term goal was to have over 100,000 companies registered on the site, which represented about 25% of the market. MetalSpectrum projected that it would be profitable by the first quarter of 2002. It was anticipated that break-even would be reached by September 2001. However, MetalSpectrum would continue to need a cash infusion to keep them going through the first quarter of 2002.

7. THE DIGITAL MARKETPLACE INFRASTRUCTURE

The choice of the software technology provider came down to either Ariba/I2 or Oracle. Alcoa was partial to Oracle because they had standardized on the Oracle platform throughout their organization. Choosing Oracle to build the digital marketplace would definitely have made it easier for Alcoa to integrate its own systems with the digital marketplace. In the end, however, software providers Ariba and I2 were selected because it was believed that their technology could provide most of the functionality required. Of particular importance was their ability to handle a more complicated catalogue whereby metals could be described by a range of attributes instead of just a standard SKU.

Work on building the digital marketplace began shortly after the March meeting of the founding members. During April and May, teams of individuals from the various member organizations began working on requirements. These teams were organized by function – a catalogue group, a commercial group, a registration group, and a content and community group. These teams defined such things as how a catalogue should work, how an auction should work, how an RFQ should work, and how to interpret purchase orders. After analyzing the requirements in great depth, the groups began to compare the requirements to the functionality of the Ariba and I2 products. On June 1, Arthur Andersen joined the team as

the systems integrator to help with this task. The analysis, which was presented to the board on July 5, identified significant gaps. The CTO described for the board the work that would need to be done for Version 1 and then for Version 2 when more functionality in the Ariba and I2 products would become available.

In order to meet the soft launch date of September 12, 2000, several different software development teams from Ariba, I2, and Arthur Andersen needed to work in parallel. In all, there were five teams of 80 people working in the United States in Mountain View (CA), Dallas, Tampa, Atlanta, and Chicago. One team worked on integrating modules between the Ariba product and the I2 product. Other groups worked on extending the functionality in Ariba and I2 to encompass the special requirements of selling metals. And a group in India worked on developing content for the Web site and creating the metals catalogue. For much of the time, the development groups worked with beta code. Significant customization using Java Server Pages (JSP) was required in order for the Ariba/I2 products to fit the requirements of the Web site.

In May, the CTO designed the IT organization that would be needed to support the digital marketplace once it went into production. Knowing what the final state would be to support the site, the CTO looked for opportunities to hire individuals on the development team that would later become permanent employees. By December 2000, the burn rate for the Arthur Andersen consultants was about half of what it was in the August/September time frame. It was anticipated that a number of Arthur Andersen consultants would still be needed through the release of Version 2 in order to support the continued building of site functionality

8. THE SOFT LAUNCH

On September 12, 2000 the member organizations participated in the soft launch at MetalSpectrum headquarters. The soft launch enabled the members to see for the first time how the digital marketplace actually worked. No training was provided to the members. The members, some playing the role of suppliers and others playing the role of buyers, were assigned to separate offices all over the building and told to conduct transactions with real money. For anti-trust reasons, members could not talk to each other. The trading lasted for 3 days. MetalSpectrum received valuable feedback from this exercise. Bassel described the situation:

"None of us had seen all of the components of the Web site work together since separate groups had worked on different modules like registration, auctioning and negotiation. Once we started trading, I was horrified – it was so ugly! But all of us recognized the potential for a powerful selling tool."

The members told them that the system was too complicated and confusing. They wanted the processes

such as registration to be simpler and they wanted the terminology to be more "metal-like." In all, they identified 400 items that needed to be improved. The launch date for Version 1 was moved back two weeks to October 16, 2000 in order to give the development team time to fix these problems. Over the next month, the development team worked night and day to fix the majority of the problems.

9. GOING LIVE

The digital marketplace opened for registration on September 29, 2000 and by October 16, 2000 Version 1 was up and running. Version 1 delivered basic functionality. Basic transactions such as request for quote could be provided by the Web site and simple auctions could be conducted. Bassel commented on this version:

"Version 1 is still woefully inadequate. Our sales representatives are pounding the pavement trying to get people to do business on our Web site. However, since the site doesn't have a lot of functionality, it has little to offer them. So there's our dilemma. Do we introduce customers to the Web site before it's really able to meet their needs and run the risk of turning them off and having to go back and convince them to try it again in six months when we have more functionality? Or do we want to wait to go after those customers?"

MetalSpectrum planned to adopt a six month cycle for major revisions, with Version 2 scheduled to be released in April 2001. However, sub-releases that contained significant enhancements were also planned. Version 1.5 was scheduled to be released in December 2000. This version would include a re-designed registration process and new pricing tables for copper, aluminum, and stainless.

Pricer, which was an I2 software feature for dynamically determining prices, would be included in Version 2 for those that wished to use it. Some of the members had been waiting for this functionality, but others already had other methods of generating prices and would not use this feature. The biggest challenge was identifying what was most important for the whole group. The Board of Directors played an important role in helping to steer the development of the digital marketplace in the ways that were most meaningful to the whole.

Being able to support a high level of integration was at the heart of the value proposition for MetalSpectrum. By incorporating standardized formats for purchase orders, invoices, and statements using XML into Version 2, MetalSpectrum would play the key role of translator between suppliers and buyers. Suppliers would not have to link into the individual systems of hundreds of different customers, and each one of those customers would not have to link into hundreds of different suppliers. However, the true value of integration would only be achieved when the back-end systems of suppliers, distributors, and

customers could be integrated together – a true virtual supply chain. Business process engineers from MetalSpectrum would be available to work with customers to help achieve this level of integration. The ability to integrate into the inventory management systems of suppliers was planned for Version 3. Also planned for the future was the ability to interoperate with other digital marketplaces such as Covisint⁶. The Web site was hosted by a third party. The process of moving the Web site to this host site began in late August. The Chief Technology Officer explained the process:

"We would bring in the code from various teams and we'd test it in the new site. Then we would bring in some more and test it. We did that for about a week. And we started hooking the pieces together and testing them in an integrated fashion. We only had about two and a half weeks to accomplish this. Those were difficult nights trying to get everybody on the same page as we took all these disparate pieces tested them in their individual teams and brought them together."

10. BUYING AND SELLING IN A DIGITAL MARKETPLACE

In general, the current process of buying and selling metals is cumbersome, convoluted, time-consuming and costly. Suppliers/distributors usually have large inside sales departments with the sales force on fixed salaries. A customer wishing to buy metal from a supplier/distributor typically would go through the following steps:

1. Type a request for quote (RFQ)
2. Fax it to salespersons from several different suppliers/distributors
3. Wait for a response
4. Compare the responses manually
5. Re-fax for clarification
6. Pick up the phone and call
7. And then repeat beginning with step 2

On the other side, the salesperson receives the RFP and asks himself several questions:

1. How much business do I conduct with this company?
2. Do they have a particular price sheet? If so, am I going to use the price sheet or do I actually think that competitive conditions are such that I need to be more aggressive?
3. What's my inventory position in this product?

The new process of buying and selling in a digital marketplace as compared to the traditional process would be smoother, faster, and less costly. By automating many of the tasks that were done now, buyers would have the opportunity to develop more meaningful relationships with the suppliers/distributors' salespersons. Three different

³ www.covisint.com

selling processes were provided within MetalSpectrum: catalogue, RFQ, and auction.

- On-line catalogue purchasing allows a buyer to view the catalogue for multiple suppliers and to combine items from multiple catalogs into a single purchase. A request for quote allows a group of suppliers to be contacted electronically simultaneously to request quotes on specified items. Approved quotes are then converted to purchase orders.
- RFQ purchasing involved preparing a document listed items to be purchased.
- Auctions enable buyers to bid in real-time on a list of items specified by a supplier. Auctions were not a general way of doing business in the metals industry. Reverse auctions enable suppliers to bid in real-time on a list of items specified by a buyer. MetalSpectrum allowed for buyers to participate in several different types of reverse auctions. One reverse auction used standard rules. According to these rules, a supplier had to specify a reservation price. At the closing time, the auction gives the business to the lowest bidder. However, feedback from buyers caused MetalSpectrum to make available a reverse auction where buyers could select the winning bid based on attributes such as quality, after sale service, and delivery time in addition to cost.

MetalSpectrum realized that buyers and suppliers were unfamiliar with using the auction process provided in the digital marketplace. To help the participants use this process, they created a customer support team called the *Market Maximizer*. This team would walk the participants through every part of the auction process, watching over the auction as it unfolded. If asked, they would even call auction invitees and offer to help them through the process.

11. LOOKING AHEAD – THE CHALLENGES

By November 2000, it had become clear that the adoption by buyers was occurring much slower than had been anticipated. If MetalSpectrum could not convince significant numbers of buyers that they needed to be doing business on-line as opposed to picking up the phone and calling their sales representative, then they were not going to succeed.

Another reason contributing to the slow growth of the Web site was the fact that not enough supply was being offered on the Web site. Suppliers needed to move between 5-10% of their business to the electronic marketplace before they would be able to start reducing the fixed cost of their inside sales department. Part of the reluctance on the part of the supplier, at least for the short term, to utilize the Web site was that participation would add to the existing cost structure, rather than reducing it. MetalSpectrum hoped that the appropriate equity structure had been put in place so that the suppliers would accept an increase in operating cost until such time that enough business had moved to the

marketplace so that they could actually take costs out of their operations.

Training also represented a huge challenge for MetalSpectrum. MetalSpectrum established a customer development group whose responsibility was to educate the buyers and the suppliers so that they could navigate the Web site easily. Training was viewed as an extended version of sales. The sales people got the buyers interested and got them to sign on. Then, the customer development group went in to help the buyer become an active participant in the MetalSpectrum community.

Globalization of the site represented another big challenge. MetalSpectrum elected to get the software stabilized for North America before attempting to expand their market elsewhere and having to provide the capabilities in multiple languages. MetalSpectrum saw itself as a “technology company” and, thus, was highly dependent upon the technology powering the marketplace. Their success depended on the technology being able to provide all that had been promised. Bassel commented on the future and the challenges to be faced:

“I’m so glad we got the backing of the industry because everybody can say that this is the future and in five years we are going to love it. But MetalSpectrum has to be around for 5 years in order to capitalize on this future. I think it will probably take that long before you see a significant volume going through this site.”

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