

Panel: Value Added Networks (Transcribed)

Moderator: Bill Ray – Group InfoTech, Inc.

Panel Members: Steven Wood – Vio Worldwide, Ltd.; John Teeter – WAM!NET

Bill Ray – What Vio and WAM!NET represent are a pipeline between a front-end and a manufacturing system. At least that was what they originally represented. Now, with the pressures generated by the Internet and the advent or pending advent of much greater and much more cost-effective bandwidth direct to the end user these companies are reinventing themselves. This allows them to be both a competitor and an ally to the new E-commerce companies.

We have with us Steven Wood who is the Vice President of Business Strategy for Vio and John Teeter who is the senior WAM!BASE specialist for WAM!NET. Steven will start us off.

Steven Wood – Good morning ladies and gentlemen. As Bill mentioned, I am Vice President of Business Strategy for a company called Vio Worldwide, Ltd. Vio, basically is a fast global managed network which has been specifically designed for one industry -- the graphic arts industry. It's based from end-to-end on the Internet model and as I'll describe in a few moments how the architecture works and the relationship between Vio and the rest of the Internet.

What it actually provides is the ability to move files from one place to another quickly and securely over a managed network. It also provides access to workflow applications. We've been around for a few years and the company is actually a joint venture. It was created by a partnership between British Telecommunications (BT) and Scitex. We are part of Scitex's Advance Products Division, not part of the Scitex-Creo joint venture.

The whole concept behind these two companies getting together is that BT understands more than any other single telecommunications organization in the world what it is to create, provide and manage global networks on behalf of corporate users. Scitex, on the other hand, knows the Graphic Arts industry in depth. Both are essentially service organizations and the combination provides

the ability to create managed networks and to create a service that for specific customer needs. In this case the specific customers are you.

Now, the original vision behind Vio was created in October 1995. It was created by a meeting between BT and Scitex. The whole concept was to build a business model in a number of layers. This is essentially a hierarchy of needs, so if anybody's studied management, they'll recognize this as a model of hierarchy. Now, in any hierarchy the thing you have to do first is satisfy the most basic, most urgent need. In this case, it was a need to get files from one part of the print process to another part of the print process quickly and securely. However, with any hierarchy once you satisfy one need you immediately want the next. In this case, the next need that was required was once those files had been sent. People needed to understand where they were, what status they were and what had been done with them. So in our original product offering, launched back in 1998, we combined those two layers and created our managed network. In our basic software we provide the ability to move files and the ability to track files once they've been moved.

However, the story does not end there. Back in 1995 we had already envisioned an application service provider environment. In other words, we would use our network not only to move files from A to B but also to allow people to access on-line services that would add value to the workflow. This is really where Scitex's interest lies and really where their expertise counted.

The top of the pyramid was where British Telecommunication long-term interests lie. That is, in creating and providing e-business services for a specific market sector, in this case, graphic arts. So that's the model. It consists of two main components; network and tracking with application services and e-business services sitting on top of that.

What this does is it connects each stage of the production process together, i.e. client, ad agency and creative services, publishers, prepress companies, and, last but by no means least, printers in a chain. The concept is that they are all connected to the same network. They all use the same interface software and the network covers wherever the industry lies whether in Asia, Europe or North America.

Now, we realize that different companies have different needs in terms of speed of access and price. So we created a number of access options. Most of our large customers use a directly connected T1 or in some cases T3 connection. This is provided by Vio. It's actually supplied by Sprint in the USA but it's managed and provided by Vio. This connects the customer directly to our backbone network. We also provide a nice ISDN option. This is particularly important in places like Europe and the UK, so smaller companies can use Vio on an occasional basis. There's no subscription. They just dial in, connect, send or

received the files they need and just pay for when they are using it. They can use two channels through to eight channels of ISDN to give varying speeds depending on what their requirements are.

We recognized that the Internet would also play a huge part in our access strategy. So we launched the Vio Internet Gateway back in Fall 1999. Increasingly we will be moving toward a DSL access strategy. From summer 2000 we will be launching DSL services in both Europe and the USA. For those who don't know what DSL is...DSL stands for Digital Subscriber Loop. It's an extremely advanced, clever technology which allows you to push very high bandwidth signals down an ordinary pair of copper wires. Bandwidth of a pair of copper wires is generally speaking about 3 kilohertz which gets reasonable quality speech and that's just about all. With DSL service, what it actually does is it widens the bandwidth to anything up to 155 megabits. You have to be pretty close to the central office to get that kind of speed but you would expect to receive at least 2 megabits downstream from the local office down to your site. All of the major telecommunication companies in the world are launching DSL service and several of them are in the USA. It offers a huge potential to a company like Vio because it allows us to get to our customers much more cheaply and much more cost effectively. Basically, it will turn a system like Vio from being a fairly specialist product into a mass-market product.

Let me say a few words about our Internet connection because I'm sure that's going to be a subject of debate after the presentations. We launched it in October 1999. It is an extremely easy to use system. To become a Vio user on the Internet, all you do is go to the Vio website, follow the instructions, click on the link to take you to the sign on screen and you apply for a user name and password which come back almost instantaneously. It takes literally less than a minute. Once you have your user name and password it's yours for life and it basically works on your e-mail address. To enter Vio now you type in your user name and password and it takes you through to the Vio Internet interface which looks very similar to the regular Vio interface. This allows you to send file to any Vio Internet users to any regular directly connected Vio user. You simply access the Vio directory, fill in a job ticket, attach the file to the job ticket and click send. It's FTPed from your desktop through to the Vio network and stored in the recipient's inbox. They can then retrieve it whenever they're ready to retrieve your files. And it works in reverse. It simply wants to send you a file. Let's say the company is a regular Vio user. Instead of sending it to another Vio user they would just type in your e-mail address, click send, and it will create an account for you if you're not already a Vio user and then drop the file into your inbox. You will then get an e-mail from the Vio system. You follow the instructions to log on. If you're not a Vio user already, you register immediately, get a user name and password, log-on, and there's your file waiting for you to download. Because it bypasses your e-mail system there's no limitation on the size of the file that you can send or receive over the network. The limitation will

be on the speed of the connection that you've got between your site and the Internet. What we are finding is that more and more companies have already got fast Internet connections, usually T1, so they can dial into the Vio network very quickly and send pretty large files. We get 30, 40, 50 MB files transferred this way on a daily basis.

Let me say a little bit about Vio's applications. We originally devised the whole network and the whole architecture on the basis of providing access to these services. These are some of the applications that we have launched or are about to launch today. I'll go through these in a bit more detail.

One thing we got wrong back in 1995 was that we envisioned that Scitex and BT would be developing all these applications themselves. By the time we launched the service in 1998 what we found was that most of them already existed. So rather than reinvent what was already there we chose a partnership strategy. Now we work with various application providers. It includes companies like Real Time Image in California, Applied Graphics Technologies, Quick Cut -- which is an Australian company which specialized in digital art delivery, Enfocus and Marksware -- which are leaders in preflight software -- and Noosh -- which announced at Seybold and is one of the leading companies in e-commerce around print brokering and print buying. We also partner with some of our strategic customers. Many of our customers are pretty high tech themselves. They will have already developed applications that they use for their own clients. What we've done in several examples is connect their application into our network to allow their clients to use them with a more high performance network. We've got a couple good examples of those both in the USA and in the UK.

Let me very quickly go through these applications. The first partnership application we launched was something called Vio Rendezvous. It's a screen brace soft proofing system which allows you to access a file remotely, view the file on screen, and make corrections on the file. The whole concept here is that instead of downloading a file that may need to be changed later, you simply access it on screen, make the comments, and those comments are immediately available back to the person who sent you the file. So, for example, if you are a prepress shop and you want to send a proof back to an ad agency client, you may have a 2 megabit connection and the ad agency may have an ISDN connection. This is a high res file. The last thing they want to do is download a 500 MB file over an ISDN connection. Well, they don't have to. They click the button in the interface that says "show", it brings up the interface, it actually RIPs the file on-line, sends the results of the RIP down the line and renders it on screen. You can then comment on various parts of the image and click a synchronize button which makes your comments available to the sender. There is also a densitometer feature, which allows you to measure the color of the high res file and it will give you the CMYK or RGB readout of a particular pixel on

that file. It will also give you the color book reference or the Pantone reference. Now this is not being done on screen, this is being done on the high res file which is sitting on the network.

One of the applications which Scitex developed was the Remote Print application which is basically remote proofing service. It allows you as a supplier to connect any postscript output device to the network and click a button that says publish. When you click the publish button it uploads the ICC profiles, the PPD's and the calibration stats of that machine and stores it on the network. So now if you want to send a file to that machine, you go to the remote proof application, click on the destination, select the machine that's being published and click on the button that says install. That installs the ICC profiles and the drivers on your local desktop. So what you are essentially doing is using that machine as though it was a local printer. Before you send the file you can read off the calibration status of that device. If the calibration status has changed between you installing and you sending it will actually tell you to re-install the new machine. It's not perfect color management but it's a step towards it and we've got several of our companies that use this in a lot of different ways. We changed the name from Remote Proof to Remote Print because we actually found that companies were connecting imagesetters and platesetters directly into our network and outputting directly to them.

Digital on delivery, is a very hot topic, particularly in North America and in Europe. Here's the concept. An agency wants to prepare digital art. They would log-on to Vio and use a Quickcut application. They would then select the destination. In selecting the destination for the ad it actually loads in the mechanical print specs that the publisher places on the network. You then preflight the file against that specification. Once that's done it brings you up to an interface, which gives you a thumbnail of the actual file and tells you exactly what's wrong with it relative to that mechanical print spec. It's very very easy then to go back into the file and make the changes because on this side of the interface you will see all of the faults that are wrong with the file and when you highlight one it tells you exactly where on the ad that fault occurs. So if that is the wrong color, wrong font or wrong type size you can go back and change it in the application and then pre-flight it against the print spec. The unique thing about this is that until you get rid of all the faults that file cannot be sent to the publisher. What that means is that the publisher, whether it's a newspaper or magazine, is receiving files that have been checked against its mechanical specs and are 100% accurate. It's simply not possible to move a file that isn't. This is an Australian company that we've partnered with. They dominate the market in digital delivery in Australia and they launched in the USA last year. They are launching in Europe and it's going to become one of the applications sitting on the Vio network.

We also have a media asset database on the Vio network. This is an application called M-cast. It's a partnership between Vio and Applied Graphics Technologies (AGT). What we've actually done here is to integrate the AGT digital link technology into our network to create a service called M-cast. It allows you to place any type of media asset file, whether it's still image, video, animation, or line art, onto an on-line application. Then they can be searched, accessed or downloaded by any authorized user anywhere in the world.

The concept is, as an example, you are a prepress company and you're creating an archive for your publisher client. You send the assets to the archive. You provide all the annotation necessary to allow other companies or other partners to find and retrieve them. You then give access privileges for your client, the creative services who may need access, any production sites, and all of the remote clients over the World Wide Web. It's controlled by the company who has created the archive from their own site. The advantage behind M-cast is you don't have to buy any hardware or software to use the service. You simply subscribe. We label all the metadata fields that will be used to search and find the assets. We label them with all the field names you want to use for your clients or for yourselves, create the interface for you, then you're off and running. You can store any number of assets in the database from 10 to 10 million and you only pay for what you actually use. As collections grow you pay more, as collections shrink you pay less. There's no upfront cost, no investment, and above all no risk.

This is a quick snapshot of the M-cast interface. We allow it to be customized with your logo or your client's logo. This is the search field on this side of the screen; these are the thumbnails of the assets that have been found according to a particular search criteria. If you click on the asset it enlarges it and exposes the annotations that have been associated with that image. You or your client can then add it to a shopping cart and if they need to retrieve the high res file they simply click retrieve and it's delivered over the Vio network onto their desktop.

The last application Vio is introducing for the moment is a campaign management application which creates an on-line connection between marketing companies, ad agencies and the production approval stages. The concept basically is a workspace. It allows companies to publish documents, which can then be later retrieved and used in a project or a media campaign. So the document can be any type of document. Say, for example, a campaign or design brief. It can be a work in progress. It can be the original artwork. Of course, there can be music or video that can be posted on the network. The completed work can also be placed there for review. There's a sign off tool, which means that if there is a sign off process to follow and the work won't be released until all the parties have actually signed off. When you go on-line you can see that that work is signed off and released for use. Basically it ensures that anybody involved in a project all work on the same document. It provides instant access

and the ability to review the status of a project, whether its meeting timelines with the people who have carried out their activities on-line and what's outstanding. It also gives you the ability to create and then track milestones as they unfold. And as I stated, it controls the sign off process. This application is being used by one pilot customer in the UK and they have already found it saves a great deal of money when dealing with print buyers and media buyers for T.V. commercials.

Just a quick summary of what Vio's about. As I said, it's a joint venture between British Telecommunications and Scitex. What that actually allows us to do is bring in strength and knowledge from both industries – telecommunications and graphic arts. It's allowed us to create an advanced IP network, which is robust, flexible, scalable, and probably above all open. It uses standard TCP peer addressing and has a web interface. We have a strong application focus. We've developed already a fairly strong suite of applications and we will be adding more in the future. We have wide global coverage. We already have operations in North America – USA and Canada, in Western Europe, in Japan and in Australia. Because of the ISDN access we also have customers in Turkey, Singapore, Hong Kong, and Mainland China.

We have two key advantages, which allow us to collaborate with our customers and bring their applications and services to a wider audience. One is the open system network, which we've created. The second is a very large team of integration specialists. These guys are based in Israel. They understand graphic arts, they understand the Vio network and can talk to customers in their own language and very very quickly and successfully integrate their services into our network. We've already demonstrated a track record of doing just that.

Thank you very much.

Bill Ray – John Teeter is a senior WAM!BASE specialist. What's more impressive is he's got 28 years of industry experience with about everybody – Compugraphics, Hell Graphics, and Dianippon Screen.

WAM!NET is the original value added network company. They've had an interesting and impactful life so far and I'm going to find it very interesting to see where they are heading and what at WAM!NET is new and interesting.

John Teeter – I'd like to give you a little bit of an idea of what's exciting at the WAM!NET Corporation. First and foremost was the announcement on March 16th that we will become a public company. As many of you may know we were a joint venture initially with the MCI Corporation. We ended up taking high yield funding to run the company forward and now we've made the announcement to take the company public as an IPO. We should probably be sometime early this summer. As time has gone by we've ended up with a broad



network that extends through all of western Europe, the totality of North America, we've run back through Japan and we're headed through Hong Kong and Australia as I speak right now.

The services right now are being used by 3,800 direct users, 5,500 ISDN on-ramp users, and 23,000 subscribers to our Internet Gateway. Last month we flawlessly transferred files for our customers in the magnitude of 110,000 jobs. So I guess from the standpoint of "Is this a significant issue?", it certainly is. I think that more and more people are moving into the mode of sending their files to the printers in a digital fashion. Today as we see the market emerging we believe that the impact of the Internet will be even more significant. So you'll see more e-commerce solutions coming from WAM!NET and less what I would consider direct or dedicated types of solutions.

Some of the new things that I'll talk about are that we've successfully launched a new video services group, which will be providing services to the multimedia and video production companies. We ended up incorporating in our Eagan facilities the capability of providing rendering farm services, providing the ability to run the Alias render jobs remotely. For those of you who know something or don't know anything about it, that gives the capability of animation artists who create wire frames and then rent anywhere from 200 to 2,000 SGI stations from us and perform in batch processes the ability to perform special effects and other rendering effects to a job and have it sent directly back to them either across the internet of WAM!NET.

We've also released a joint application with Impresse. Metadata from the WAM!NET job ticket and the Impresse job ticket can be worked on simultaneously or collectively depending on how a customer chooses to work with it. So that you've got data entry taking place one single time.

I'm going to launch into a little presentation. I think a picture is worth a thousand words. I'll give you the quick run through of what is the WAM!NET network, how does it work and how does it impact most of the people in the printing business.

(video presentation) Assets are mission critical to your company's success and profitability. It's going to get worse. By 2003 half of the corporate information you create will be image based. Communicating information through images will be the standard. Getting one version of each image accessible by everyone who needs it will be critical. To accommodate this, networks will have to be 20 times faster. Servers will require 50 times more storage. You'd have to sink massive amounts of capital into building the necessary network – hardware and software. An investment that will be obsolete in a year. The solution...a unique on-line service called WAM!BASE – enterprise wide digital asset management. Depositing and organizing your digital assets in an intelligent central repository

lets you take control of those assets and leverage them across all corporate initiatives. Companies enabled by WAM!BASE can realize huge cost savings by systematically reusing and re-purposing their digital assets. Unnecessary work duplication is eliminated. Workflow efficiency is vastly improved. Asset sharing among collaborators across the globe becomes instantaneous. Result: productivity soars, opportunities are seized, profitability goes up. WAM!BASE is the first truly enterprise wide digital asset management solution. It's a global service not restricted to local area networks. Even better your company can become WAM!BASED enabled with zero capital investment.

When we started we packaged the world's most sophisticated digital network into a single multi-user service. We can provide it all. The hardware, the software, the phone lines, installation, training, network management, 24 x 7 customer service, and maintenance and repair. It's all blended into a simple affordable package. Think about it. There's no capital expense. No maintenance. WAM!NET is always there when you need it. Twenty-four hours a day. Seven days a week. And our customer service department is always ready to answer your questions or troubleshoot a problem. We've invested more than \$300 million in building this service. But you can buy it for just pennies a minute. *(end video presentation)*

What that shows is the intent of WAM!NET. That we are a service provider. We're not a product company. What we end up looking to do is provide, as an application service provider, the ability to store and move files and end up linking to other vendors who provide the services to the graphic arts industry. If you were to look at who we've ended up successfully hooking up to our network, I think you would see we have quite a successful list of major US companies and foreign companies as well. I think the major reason most of them choose to use WAM!NET is the system is a very robust, easy to use system that will end up cutting literally hours out of a deadline on many projects when you are collaborating with multiple partners.

Let me give you an idea of what happens in a typical environment where somebody needs to send a job file.

(video presentation) Simply sending files on WAM!NET is a piece of cake. Here's how it works in five easy steps. Let's follow Joe's file. Joe is a creative type in L.A. He's sending a file to his client in Chicago. It's 5:15 pm Joe's time. With a simple click of the mouse he sends his file from this desktop to our network access device. It's our famous purple box , the gateway to our network. Inside the net a backup copy is made and it gets encapsulated for safekeeping. Then Joe's file moves from his side of the net to the WAM!NET side of the net. The unique connection between Joe's computer and the net is sealed shut and the file is sent. From the hub there are multiple redundant paths it can take. If one of those routes is down there is always another way to get there.

WAM!NET's sophisticated hub and spoke network is connected to our network operations centers in Minneapolis and Las Vegas. There, our full-time staff of network engineers and customer service personnel monitors each file transfer. They have hands on control of the network to re-route files and keep track of flow to make sure that Joe's file takes the fastest, safest path from point A to point B. They are on-line 24 hours a day, seven days a week to troubleshoot problems and answer your questions. It's all part of the service.

When Joe's ad arrives at his client's net in Chicago she can retrieve the file from her desktop, check a digital proof, and approve it all in just minutes. Back at Joe's it's 5:30. Joe just bought himself an extra day to get the concept produced. Joe's client is happy. Joe is happy. Joe is going home. Want to see that again. WAM!NET is the simple way to get digitally connected. With the click of a mouse you can re-capture the lost time in your production process. You can get more done. You can meet tight deadlines. You can have happy customers just like Joe. (*end video presentation*)

I think that gives you an idea of how the old what we'll call direct service on WAM!NET does work. I'm going to show you now a little bit of what's new within the WAM!NET environment. I think this will give you a little bit of an idea of where we're heading in the future.

Last summer WAM!NET introduced our Internet Gateway. We actually released it on a beta basis approximately a year ago to some of our current clients. The intent of it was trying to identify a solution for customers who didn't want to purchase their own T1 connection contract with WAM!NET to utilize the extensive backbone that we've built across the country. With that we decided that a browser based application that could be used for file transfer and as a gateway into the WAM!BASED libraries would end up being a logical solution. What it really did is rounded out the offerings for file transfer from WAM!NET. So that now we can end up offering to a prospective end user direct service which is the purple box you just saw, ISDN service from our 4-Sight company which is basically a dial up system, ISDN lines dialing directly into WAM!NET servers or dialing point to point amongst themselves. And now the Internet Gateway, which allows anybody whose got ISP connectivity to utilize our backbone. I think one of the most successful stories we can tell on the first uses of the Internet Gateway was to send Fortune Magazine, for the European division, across the Internet Gateway where it was printed in both London and Germany. That was about a 2.3-gigabyte file transfer that they were capable of doing across the Internet. I don't think many people would attempt to do something quite so large by themselves. However, by routing through the WAM!NET backbone we were capable of successfully sending a file that way.

In this diagram you see what was the old version of WAM!NET. Anybody who was hooked up to the WAM!NET cloud had to have the purple box. That purple

box really includes a T1 or better connection, it includes a SGI box, UNIX server, RAID, UPS, all the types of things you would typically put together for CSU DSU to have a functional high speed server hooked up to a network. We then ended up acquiring about 2 years ago the 4-Sight company who ended up providing dial-up ISDN services. We incorporated that into the cloud or incorporated into the WAM!NET network. Right now we've been very successfully working with some of the Pacific Rim countries as well as European countries where ISDN is still very much in favor. The new release is a gateway, so anybody who has Netscape or Explorer can end up utilizing our backbone facilities. Much like what you see as far as the Vio solution, WAM!NET permits anybody to sign up. They end up getting a user name and password and from there they can establish relationships with people they choose to do business with. That will also allow them to send to any of the direct WAM!NET subscriber, ISDN user and it also allows people who have FTP hosts to utilize the Internet Gateway. We've been very successful in utilizing this as a strategy for retailers to move files to the newspapers. The newspapers, for the most part dailies, have set up FTP sites. By utilizing the Internet Gateway, WAM!NET can send ads to the majority of newspapers, metropolitan dailies as well as the smaller dailies and weekly newspapers across the country. We have some 780 newspaper accounts who've hooked up and are receiving digital ads this way. It will also allow you to send an e-mail account or any other Internet Gateway subscriber.

To give you an idea of the service levels that we provide. One of the things that we're going to be providing is what is called a hosted service. This is typically sold to the print environment. The printer chooses to go to a hosted type of account. Any of the files that come to them they will end up paying the bill for. We've also set up corporate gateway accounts. So the large organizations, a corporate entity, that may end up having multiple users can have their own single account with centralized billing for everyone. As well as on-line accounts, clients can sign up to get on the Internet Gateway by providing a Visa, MasterCard or American Express and their \$10 subscription gives them the equivalent of 108 bytes of file transfer and puts them into the directory service listing for a one-year period.

Some of the things that the gateway provides. First of all, we looked into providing a solution that was very easy to use. If you can get into a browser and you can remember your password, you can virtually assure yourself that you can use the Internet Gateway. We've included in it job tickets. They can either be customized or they can be standard tickets that WAM!NET provides. This allows direct and corporate service users to end up putting all the information they deem as being pertinent to any of the jobs they're sending along with it. When a job is sent through the Gateway there is file receipt e-mail notification. Basically this allows anybody who knows they need to get something to a printer or to a prepress house as soon as the file in its entirety has been received

by the Internet Gateway there will be an e-mail sent to the sender of the file. There will also be an e-mail sent to the receiver of the file. The receiver will be notified. It literally can be set up so the CSR can receive notification, the sales representative and the production department in the printing house that may be doing a job for a client. It also provides for on-line package and job tracking. Anything that you send, you have the capability of going into the information center and making sure that the files have been received by the end-user. It's also a great tool for people who need to end up associating costs of that file transfer with jobs for billing purposes.

There is also an on-line directory service. Anybody who joins on the Gateway can end up putting a basic yellow page type ad listing services and functions they can perform within your geographic area.

It also provides for secure socket layer of transfer. You may end up utilizing encryption of the files, so if you deem your data to be sensitive you have an extra level of security need on it. You do have that capacity within the Gateway.

You can see here what the log in screen for the Gateway looks like. There are three functions available to an end-user. The top icon on the left is the ship package. Click on the ship and you can send a file. If you want to check the status, shipping status is the truck. If you want to receive a package, click on the package and it will end up taking you there.

The job tickets, here are two of the seven that we are providing now, allow you to use a simple file folder type of an icon. Flip through the different top tabs, fill out the information that we are going to association to the job and it will allow you to end up putting instructions on how you expect the job to print once received at the end destination site. Sample here of the notification that you end up receiving e-mail wise. This gives you an idea of what the status tracking looks like. With the on-line package tracking you do have the capability of selecting files either by job grouping, or package ID, or date shipped, or customer sent to. We transfer that data into your account in the system. It will also end up giving you complete status reports as to what has happened to that.

As far as the general listings, you do have the capability to end up determining who you want to or don't want to trade with. When somebody requests permission to send to you, you do have the capability of automatically accepting all jobs that somebody may send to you. You can put it into a mode when you need to check and verify that you do want to end up receiving files from somebody. So you do have the capability with WAM!NET to determine who you may or may not want to do business with.

As far as we are concerned, what we're trying to build into the system is a highly flexible tool, providing great efficiency and having the capability of a

managed network that anybody can work on without having to be a rocket scientist. Then provide along with that the support that we have been giving our customers of direct services for the past three and a half years.

As far as the pricing is concerned. The key here is pricing for file transfers. On WAM!NET using Gateway it ranges from 10 cents a megabyte at the maximum down to 4 cents a megabyte anywhere in the world. Files can be sent to any other WAM!NET subscriber. You can get an idea here. With a hosted account we end up providing significant discounts for customers who end up being volume users. This will give you an idea of what purple box users would end up paying per megabyte of transfer on their system. The corporate accounts are primarily for people who have large numbers of users, agencies, corporate accounts and other people who have the capability of working with them.

From the standpoint of where are we heading now, I think the key with WAM!NET is we're looking to add more value added services to our end user community. We look to add in a number of different e-commerce solutions, people that are providing the ability for people to interact and trade files across the Internet and integrate WAM!NET into it. We hope that we'll end up extending the capabilities even further than we have right now. We most recently signed an agreement with Windstar Corporation. Windstar has provided funding in excess of \$100 million to WAM!NET and has agreed to end up selling our services to the video marketplace. We also see Wireless as being able to provide us with the bandwidth requirements to far away, hard to get at places that we've ended up in the past not being able to find suitable routes. Particularly in some of the printing plants we've had to get to that did not have good telephone service. Windstar will give us the capability of providing T3 speed at less than T1 cable prices.

I look forward to any questions and thank you for your time.

Bill Ray – Let's talk briefly about why we've done this exercise the past two days. Then I'm going to pose some questions to our panelists and maybe goad them along on telling us what their plans are on a couple of things.

It's inevitable that more and more of our manufacturing problems are digital ones as opposed to mechanical. We've seen that within all of our organizations. One of the rationales of having these two panels, the E-commerce panel and the Van panel, is it seemed to Jim and I that these organizations were doing similar things but they were approaching it in different ways. There were some things that meshed and some that didn't. The older organizations, people who have more history, are the value added network people because the hardware guys led the charge a few years ago.

Now, what I'd like to find out, personally, is how do we de-labelize the relationship between the new e-commerce companies that we talked to yesterday and basically you guys. They way they look at it is you're a highway and they're the data. And the way you look at it is you're a highway and data. How do you guys untangle the ambiguity? Would someone like to take a shot at that?

Steven Wood – Vio has a relationship with all the e-commerce companies like Collabria, Impresse, Noosh and PrintCafe. The way we see our relationship with them is that they're going to develop very specific applications for services like print buying, print management. What they lack is the fulfillment part of that process. That is where companies like Vio actually come in. We will integrate their front-end systems into our backbone network. So that one of the clients chooses to use one of the Impresse, Noosh, or PrintCafe services then they can create the deal, do all the negotiations and communication required to set the thing up. Then at the end of that process, when the job is ready to be shipped, then they'll click a button to ship the job. The whole concept here is that in the background that will be shipped over the Vio network. If doesn't just end there because most of these companies are already interested in the other applications that we bring which means that they don't have to develop them. For example, the asset management database. Noosh, for example, was going to develop their own asset management database to sit on their application. What they're actually going to look at is using M-cast instead because it already exists. They will also be using some of our project management tools on-line as well. So it's more than just shipping files although that is where Vio first comes in. So it's about shipping files and it's about using Vio's applications. What we won't do is move into their space and develop applications, which basically replace Impresse, Noosh, or Collabria.

John Teeter – I think WAM!NET's approach is very similar to what Vio is talking about. I believe that what we see as a little bit different is we will attempt to provide more integration of the job ticket type information or the information that right now is hard to capture on a digital job. I look at the marketplace right now and five years ago when jobs came in with a mechanical. There was something to discuss and everyone had a pretty clear idea of what the job was going to be. Now, when jobs are entered into production, a salesman brings in a zip drive or jazz drive and says "Print the job. We can do it, can't we?" He doesn't know if he's got a 4-color job, an 8-color job and has very little idea of what's going on. People who've really got to sort it out are usually the people in production and/or the CSR's. What we don't want to do is put a situation together where people have to re-enter data 3 or 4 times into the systems that they have. What we'd like to be able to do is with people like Impresse, and we're working with some of the others like Collabria as well as Noosh, is provide services where we can end up extracting metadata either from their front-end or our front-end and build it into the job ticket, the actual job. So that

when it enters into production, more and better information transfers along with the digital file, which will go across our backbone.

Bill Ray – That’s good. I guess the question that I have, I’m going to do some devil’s advocate here. OK, you’ve got all this stuff. That’s cool. But what about Metronet? That’s the cable companies who are wiring as fast as they can go. For instance, I can sit at home and run 10 megabit into the backbone with no problem.

Steven Wood – The use of the Internet is going to become much more predominant in the digital transfer of graphics files. Of that, there is absolutely no doubt. That is the key reason why when we developed our architecture we used the Internet as the model. Now, we saw long-term value not just in shipping files because as you point out Bill, you can ship them using fast connections from your local supplier. Long-term value is taking away the technical headache or networking headache away from the company if that’s required. But more importantly by providing the on-line applications which are specific to printing and publishing and the graphic arts. We don’t expect any telecommunications company to be able to do that because they don’t understand nor do they have a particular interest in specific vertical sectors like graphic arts. So, long-term value is in the applications rather than just in moving files from A to B.

John Teeter – I would agree with what was said there. The other side, I think that what WAM!NET believes to be the value added is bringing our Internet Gateway service to people. When I go to a typical design firm whose going to be front-ending production for most of these print jobs and I start asking them the tough questions about file transfer or they call up their prepress vendor or their printer and say “I’ve got my file. I’m ready to send it to you” they’re typically working with an e-mail transfer because they don’t have any idea how to utilize an FTP effectively. They end up potentially running into problems where the printer will ask them to Bin Hex a file and ship it along so the resource forks will be retained in the job. They might as well be speaking Chinese to that designer. What we’ve done is built a simple little shrink wrap tool into the Gateway so that anybody, and I don’t mean to be disparaging to any designers, but people who are not typically involved in high end process oriented job work sending lots of files lots of times can effectively send jobs anywhere from 5, 6, 7 megabytes or up to literally hundreds or thousands of megabytes effectively across the Internet. Most people cannot do that today as they work with their e-mail systems.

Bill Ray – The question I have for you is I don’t view the Internet as being your real competition even with the Metronet. The question I have for you is the value I see along the net is metadata as opposed to moving data per say. Because it’s relatively expensive to move 10 GB down the wire. If you approach the

problem even through proprietary network architecture or an external accessible proprietary high-speed network or through a VPN with high speed hooks it's still relatively expensive. I see the real competition as being still Fed-X. The question I have for you is, and this is a technological and money question, what so you feel is the appropriate scale to use a value added network as opposed to dropping it in the UPS or Fed-X box? What's the tip point?

John Teeter – I don't think you can give that a simple pat answer and I'll give you a reason why. There are people who have a cost of money or a time value of money that's going to far out weigh whatever it costs to send a file Fed-X, courier, or whatever. For example, if I'm going to release the new Michael Jackson album in Hong Kong, London, and North America at the same time, I want to end up delivering artwork and everything to the press for film in-house. I can't afford to have films hung-up or disks hung-up in customs for 10 days. The value is not having that since I'm willing to pay maybe thousands of dollars to ship that digital data where it needs to be. If I'm Tom the quick printer and I'm getting a job, a black and white résumé, it better be free. I'm not willing to pay anything. I think the commercial 4-color print marketplace is somewhere in between. There is a value of time correlation that you've got to put into consideration there. Time Magazine sends to nine Donnelley printing plants across the WAM!NET network. They end up paying very much. Probably in excess of \$1 million a year to us to ship that data. But a news weekly has to end up being able to get to print, get to the press on a timely basis. And it was less expensive than the satellite system they had been using to probably a 10-fold reduction in costs for them. Is there any base-line price that we're going to have to hit as a minimum? No. We've got to cover our costs and be profitable. If people are willing to pay that then we'll succeed. If not we'll have to end up coming up with some kind of new models or some kind of new services that people are willing to pay for.

Steven Wood – I think I can echo all of that. One good example is that before Vio and WAM!NET came along most of the big graphic arts organizations like Time, Inc., like Quebecor had already invested millions of dollars in their own networks for precisely the reason that time does have a huge amount of value. One of the UK based publishing groups used to spend, before Vio came along, \$144,000 a year just to move two magazine titles from London to Sydney over a frame relay network. The reason they did that is because they could get the publications to the newsstands two days before in a weekly cycle. It meant they could incorporate local advertising and the circulation basically paid for \$144,000 worth of network connections. It would have been much cheaper to use couriers but they wouldn't have seen the benefits.

John Werner – Having worked to install the satellite service of the N.Y. Times and then, later, to install private networks for News Week and Business Week, those private network services via satellite were expensive but they were secure.

There's been one satellite failure that I'm aware of in the last 10 years or something like that, that really impacted the world. If I were still doing that job I would be real concerned about how to tell my management I didn't publish because the Internet went down today. So I think that the value of this data that you describe is very real. I would be hard pressed to show how I could bet my company's future on the Internet for this kind of application. My question to you, Bill I think, is we've heard here and before about the multiplicity of e-commerce companies of which there are now about 40. So printers are going to have to start to wonder how are they going to be able to deal with a client that wants to talk to them via any one of these. So among other attributes, if I'm understanding it correctly, the Industry Architecture Project with its database of common names will be one step towards that. So could you comment on whether or not that's true and how that may play into the dispatch of files, which has been touched on here already.

Bill Ray – Ok. We'll descend into some database talk here. What TAGA is trying to do with the Industry Architecture Project, in conjunction with GCA and R&E Council, is to build initially a data dictionary. That data dictionary allows us to go to vendors like Vio, like WAM!NET, like Collabria, like Noosh, Impresse and PrintCafe and say here take this and let's call all of this the same thing. You can call it anything you want in your particular local language but this is the field, this is what it represents and this is the structure for it. So that what we have is we then have a common base of data. A common way to exchange data, if you will. So I can then lock and keep things across applications. The theory of designing applications on top of databases is that every application stands on the database and all the communication process is through the database. That's classic database design. So, in the case of Impresse for instance, they can build a system to do all the metadata stuff over the network. But then when you need to do a secure transmission, that information can lock and key into their application as being application service providers. Which is really where they're moving. And then suck stuff through these high-speed secure networks into their system. The beauty of it is it allows you to not have to do software recapitulation between processes, between foreign vendors. What we are basically doing with the Industry Architecture Project is trying to build a Rosetta Stone. Do you guys have any thought on this?

Steven Wood – Most of what you just said is exactly what we're trying to do with the e-business companies. As I think John has already mentioned, a lot of it is around reducing the need to re-key any information. So providing you've got an open structure, you can pass data from one type of job ticket to another. That's the type of integration that we're already doing with companies like Noosh.

John Teeter – I think what you're describing is absolutely invaluable to the industry. The question that sits in the back of my mind even as I talk with my

partners in this business is the American printer, who's a frontiersman in my mind, willing to give up the kind of money they're going to have to, to use these e-commerce companies. Until there's a higher percentage buying from them I'm not sure that that's going to end up becoming viable as an economic model for probably 3, 4, 5 years to come. I've been to literally hundreds of accounts on the West coast. Talked with them. Made presentations with the other vendors. It's a tough sell right now. It's a real tough sell. Everyone is interested and no one is buying.

John Werner – Isn't the answer to that, that when the buyer says when you want my business you've got to come to me? I'm talking to you, sir from WAM!NET. When the print buyer says if you don't use this system, I won't use your company. That's going to be the inspiration.

John Teeter – I would agree. That's why the shift now is going away from those companies having sales people calling on printers and going out and going to print buyers and people who are in the marketing communications departments of the large corporations to end up convincing them to use us and force you printers on.

Bill Ray – I'd like to just jump in and we'll go to the next question in a second. As far as John's comments are concerned. I think you need to understand while on a gut level I feel that the e-commerce players are the next major companies in the printing business. I think that none of the e-commerce players has a clue as to what their business plan should be. They know they want to do something but they haven't quite figured out what they want to do yet. It's obvious in the way they're approaching it. In fact, one of the things that's obvious to me, I think that the straight front-end system, straight network systems are not going to be successful. They are going to have to modify their behavior and go into workflow automation and go deeper into the plant. The interface is a problem. If you pass through the interface and take that into that plant then you have a real value add. That actually plays into the valued added network business model.

Dick Powell – I just had a one comment and the two questions. First, I just wanted to mention how important this really is because we just finished up a project from IBM for a large pharmaceutical company worldwide in which they will provide about 20 different print plants all over the world. But they will all be controlled from one location within the United States. All the pharmaceuticals have to have English as one language and then the two major languages of the area in which those pharmaceuticals are going. All of it's being controlled in one location. It all has to be checked. All the translations, everything has to be controlled. Then that information is kept in one place and then sent out worldwide to the difference digital print plants throughout the world to be printed for whatever product that they're printing that day. So, this is an almost instantaneous type of thing we're doing. It's a digital print engine with

the associated products in order to turn out actual labels for those pharmaceutical products. So here's a real application of day-to-day type of thing that there's no way that the Fed-X is going to work. But also the security and the importance of pharmaceuticals and all the things that have to occur.

But I had two questions. First of all, you both alluded to it, video conferencing or just conferencing? Do you have the ability to do that? Is that all part of it? Because for example many times, let's say the artist over here and the people over here need to talk, need to look, need to discuss things. Can they do that over your systems, whether it just be voice or video? The second is, you've talked about a lot of areas but the one area you haven't really talked about that really is exploding in many ways and that's South America. What are your plans there?

Steven Wood – On the video conferencing side. My colleagues back in BT have been itching to drive video conferencing applications into the Vio network. Technically it is feasible. Video conferencing over IP networks is done on a regular basis now. The reason we haven't is because there hasn't been a hugely warm reception from the market. I guess people are a little bit reluctant to use video conferencing in any business relationship at the moment, much less in talking about detail things about their process. What we've actually done is introduce products like the Rendezvous application, which gives you an on-line conferencing capability. As that takes off and people get use to using that as a way of working then we could roll in more robust conferencing applications like face to face video conferencing. So I guess we'll be market led by that introduction.

South America is a tough one. Yes, we intend to go there. Mainly because several of our clients have asked us to go there. The problem is the availability and costs of network down there. At the moment it's not available and it costs a lot. The Internet does give us a first foothold there. Although it's not as robust as we would like. I guess we will continue to talk to our customers and look at it as an on-going development. I can't give a time scale but it will certainly be on our horizon soon. Satellite office is an option. We use Visa satellite systems to get into places like India and China. So that is definitely an option. Visa has a very good technology for that.

John Teeter – Our approach I think is pretty similar right now. I think that at WAM!NET we believe the utilization of PDF for the on-line annotations and discussion of what a job may look like and should be done in a collaborative fashion is probably the way that most of the clients should end up heading. The reason we've specifically stayed away from voice over IP is that ends up putting us into a position where we enter into marketplaces where we're going to have much more governmental regulations. As a carrier of voice data we'll end up being subjected to tariffs that are much more stringent and much less

competitive then if we're just an IP service provider network wise. We currently are using voice over IP with about five beta sites here in the United States. Just testing it. It's working. It's viable. It's more of an issue of what do we choose to do with it.

As far as South America is concerned. Yes, we'd love to get there. It's the last mile question. In most cases you've got telco's that are very difficult to work with and very highly priced. A three-mile run of a T1 line in Mexico City is in excess of \$10,000 a month. Not quite as bad as running a T1 in Shanghai which is \$67,000 a month. But we see the introduction of wireless services in those areas as probably going to be the solution that WAM!NET will take as well as Visa add technology as well.

Bill Ray – We do a lot of work in Southeast Asia and in Mexico particularly. It seems like the farther you get away from Europe, or Japan, or North American, the more bureaucratic the tel coms are and you wind up digging through mountains and mountains of paperwork and then it doesn't work generally. It's all the fun in the third world.

We are out of time. I want to thank our panel for doing an outstanding job.