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## Feature: [itvt] Interview With Timothy R. Wahlers, President & CEO of Vidiom Systems



**Date:** February 18, 2003 -- Broomfield, CO-based Vidiom Systems is an ITV consulting company that worked closely with CableLabs on the development of the OCAP specification, and which is currently working on an implementation of OCAP for a major US MSO. Timothy R. Wahlers, the company's president and CEO, recently spoke to [itvt]'s Tracy Swedlow about why he believes OCAP significantly improves on the MHP standard, about the state of relations between the cable and consumer electronics industries, about how to accelerate the uptake of OCAP, and more. (Note: Michael D. Malcy, Vidiom's VP of business development and marketing, also took part in the conversation.)

**[itvt]:** Timothy, could you tell us a little about your background, your company, and how you came to focus on ITV?

**Wahlers:** Well, over the past 16 years, I've been involved with 7 or 8 cycles of the ITV industry. However, I actually have a nuclear engineering background. I have a nuclear engineering degree from the University of Wisconsin, Madison and spent 5 years working for the electric utility in Chicago, Commonwealth Edison, developing process computer systems.

**[itvt]:** How did you segue from nuclear engineering to ITV?

**Wahlers:** In the early to mid-eighties, I became interested in laser discs. I worked on a project to create a surrogate tour of a nuclear containment on a laser disc. The disc had 50,000 pictures, so you could walk into the containment virtually and see where all the pumps and valves were. The tour was designed for the maintenance guys, so that, when they had to go in, they'd know where everything was. They'd be able to run in, tighten the valves, twist the screws, and then run out. So that was the first project I worked on that you could call "multimedia," though I don't think the term was used at that time. That was back in '84 or '85. How I got into ITV was via a technology called Compact Disc Interactive (CD-i) that Philips put out in the late eighties, early nineties. In fact, I would say that of the 40 employees we have here at Vidiom, around half have a history that goes back to the CD-i days. I was CTO, then CEO, of a company called

OptImage that developed software tools and applications for CD-i. The company was focused on business applications of the technology more than consumer applications. Of course, consumer success was what Phillips was aiming for with CD-i, and it never achieved it by any measure. However, there was some business success for the technology. OptImage sold the first MPEG encoding system: we helped establish the MPEG-1 standard, and worked on early MPEG-2 efforts. The company was owned mostly by Philips and also partly by a company called Microware.

**Malcy:** I don't know if you're familiar with Microware, but they built one of the first set-top box operating systems, called DAVID, that was used in many of the early ITV telco trials.

**Wahlers:** Philips chose Microware as the OS supplier for its CD-i technology, and Microware used this "anointment" by Philips to bridge into ITV--i.e. into wire-delivered interactivity as opposed to the CD-ROM-delivered kind. Back in those days, we used to say that it was the same thing--just that the wires were longer. In the early nineties, Microware was working with a lot of the Bell telephone companies, which were trying to deploy digital set-tops.

**[itvt]:** So was Microware involved in any early ITV trials?

**Wahlers:** Yes, 4 or 5 trials. US West had a trial in Omaha, Nynex had trials, Bell Atlantic was probably one of the bigger ones, Americast was another one. A large number of people working in the industry today got their start in both CD-i and those early ITV trials. Another notable trial was the one in Orlando that Time-Warner, SGI, and part of US West undertook. I was involved only peripherally, but this was the first big cable gamble on ITV. I take it you are familiar with the Full Service Network?

**[itvt]:** Yes, of course.

**Wahlers:** So, we have a few people at Vidiom who were involved with ITV technology back then. A lot of our people used to work at the Bell phone companies and were involved in those trials.

**[itvt]:** So how did you get from OptImage to Vidiom?

**Wahlers:** Back in '96, Philips wanted OptImage to focus solely on CD-i, I wanted to do ITV and more. I was also looking to have more control. I left OptImage to form Vidiom. I decided that the company should be located in Colorado, because I thought that the cable operators would be the necessary partners to make ITV happen. I wanted to build relationships with the cable industry, and, as you know, that's not always easy, and from a distance it would have been even harder. I moved here with a contract from a company that became OpenTV. We worked with OpenTV when they were starting out: I was good friends with Vincent Dureau and some of the other founders. So we were working on a number of projects for OpenTV, and were also exploring various ways of getting venture capital funding. In the process, we decided on the service-oriented approach we have today. Probably because ITV has yet to take off fully, we have made a conscious decision to focus on the services side, and build our expertise and build our relationships. Ideally, Vidiom will one day be a half-services, half-product company. But today we're focusing on services, in part to avoid entangling ourselves in competition with our customers, and in part because we're waiting for the market to gel. We bootstrapped the company from scratch. It's a privately held company with a stock option plan and employee ownership. Other than that, there is no external money in the company whatsoever. It's entirely member-funded. It's 6 years old and we've been making money every one of those years.

**[itvt]:** Who are your clients?

**Wahlers:** Well, we did a number of things for OpenTV. We've also done projects for Liberate, Microsoft, and Canal+ Technologies--in fact, we have some people with a strong history at Canal+: Eric Miller, our VP of engineering, was Canal+'s chief scientist in the US before he left to join Vidiom.

**[itvt]:** What kinds of services do you provide?

**Wahlers:** Well, we're basically guns for hire. So, consulting is probably a good word for what we do. We provide services such as building applications, building tools, providing documentation, developing training courses. We also do standards work: for example, we've been working on a lot of CableLabs OpenCable stuff.

**[itvt]:** Could you give an example of the applications and tools you've built.

**Malcy:** We developed OpenAuthor, for example.

**Wahlers:** We've developed a number of tools under contract to these various companies. The companies that hire us own the tools that we build for them. We have also developed native and VM middleware environments for a number of clients.

**[itvt]:** Are tools your primary focus?

**Wahlers:** One of our strengths, yes. We're interested in developer tools because we think they're critical to the success of the industry. One thing we're very interested in, for example, is OCAP tools. We've built a variety of tools, ranging from software development solutions--that are typically a compiler and utilities to help programmers--to high-level tools to help user-interface designers and content experts. We have significant experience in developing applications and often find developer programs lacking. The tools business is not often the best way to make a buck, but I guess it is in our blood.

**[itvt]:** One issue we keep coming across when we cover developments in the tools sector is that none of the currently available tool suites is able yet to spit out code for all of the different middleware platforms. The companies that produce them have to build a separate formatter for each platform.

**Wahlers:** Well, one possible solution to this problem is through industry standards. As you know, there have been a number of industry initiatives--for example OCAP--which are based on the idea that Java is a base technology that could be utilized for a one-app-fits-all ITV solution. Nevertheless, even if everybody chose HTML, or XML, or Java, or some lower-level language, there's always going to be difficulty in retargeting an app. A lot of the work that goes into building content is understanding things like the aspect ratio, the color spectrum, and the display quality. That work isn't going to diminish or go away, just because we picked a common language. You hear that observation a lot in the industry. I know that Vincent at OpenTV has made those types of comments, as have many others. I guess I would agree with them. But I do think having a standard language is certainly helpful, and that's why we committed...why I committed a lot of my own personal time and effort. Myself and other Vidiom people have consulted at CableLabs to help analyze the options and write white papers and background documents for the cable industry to explain the choices they have in the software field going forward. And it has been a very long process: I started working on OpenCable in early '98, and it was a good 3 years before we had cable MSO support for a Java-based standard. We were contracted by CableLabs first to help them review the options and then to write the RFP's and the specifications. So we have had a strong role, a major role in the development of OCAP.

**Malcy:** We're still involved in the ECR process from that.

**[itvt]:** Could you tell us a little more about the current status of OCAP? To what extent is it meeting with acceptance?

**Wahlers:** I think, at least from the perspective of people who haven't been involved in the process, it has been staggering forward.

**Malcy:** I think it's unfair to say that there's been a holdup. We're talking about the development of a standard, here. If you consider most standards throughout the world, they weren't invented in a week and then implemented in another 7 days. It really does take time to do these things.

**Wahlers:** There are a number of things that make the going tough. It has a lot to do with the nature of the cable industry: it's a bunch of distinct companies, each with its own interests and desires. They have a selection of vendors that they've grown to trust. Nevertheless, they do question this commitment of theirs to such a short list of vendors, and whether it's good for their business. They're extremely bright people, and they're trying to do what they can to break the control points that they have currently, and to avoid control points in the future. And OCAP is one of these ways of opening up their industry. But, that said, they're operating companies. They're like electric utilities (I can say that because I worked for an electric utility myself). They have to worry about that bill coming in every month. They have new opportunities for growing revenue; but, at the same time, they've got new competitors: satellite-TV companies and maybe also overbuilders. So, obviously, they have to try and protect what they have, and yet pursue some of these new opportunities at the same time. It's a very complex thing to juggle all these issues. Nevertheless, in the past 5 or 6 months, I've seen more efforts on the part of the cable companies to build momentum than before. So, to me, all the signs are right. The commitment is much firmer. In fact, I can tell you that we're currently building an OCAP implementation and that we're working with a cable operator to do so.

**[itvt]:** Can you say publicly which operator you're working with?

**Wahlers:** Unfortunately, I can't at this stage. Of course, I'd love to be able to talk about it, but, as I think you're aware, the cable companies are reluctant to be public about some things, and generally try to maintain control over the information flow. So what I can say is that right now we have a significant team of engineers, testers and documenters working on this, and that we have a very tight timeline to pull this together.

**[itvt]:** What's involved in building this OCAP implementation you're working on?

**Wahlers:** Well, while building is part of what we're doing, the other part is integration. So a lot of it is about the selection of a good MHP vendor, the selection of a good Java Virtual Machine vendor, and the selection of the various other elements of the software pack. One way we could have gone, as a company that believes in the OCAP spec, would have been to build an OCAP implementation from scratch and hope the customers would come to us. But the only way to ensure that any implementation we build is going to see real deployment is to work with an operator who wants an implementation for a specific location, on a specific box.

**[itvt]:** Can you say which technologies you've selected for the project?

**Wahlers:** Unfortunately, I'm not at liberty to say too much about who we're working with and what technology choices have been made thus far on the project. But, even though we're working with technologies from a number of 3rd-parties, in accordance with the specific needs of this particular customer, and even though other customers who commission us for similar projects in the future will have different technological requirements, I do think the implementation we're working on is something we would like to market ourselves one day, and whose major components would be portable to all of the companies we expect eventually to have as customers.

**Malcy:** Each cable operator is unique, and their headends are all different. So when this project we're working on is launched, it won't be pure OCAP right away. However, it's part of the road there.

**[itvt]:** Could you talk a little bit about the differences between OCAP and the MHP spec that it's based on?

**Wahlers:** I think that OCAP is a significant technological leap beyond MHP. To my mind, MHP is designed more for content-enhancement, for building broadcast-synchronized enhanced TV applications, and less for building what might be called "resident applications"--program guides, VOD apps, and so forth. Those types of apps tend to be a little bit closer to the metal. OCAP has been designed more for those kinds of apps than MHP has. In fact, that's one of the reasons why we're very interested in it.

**[itvt]:** So you see OCAP as more suited for the heavy-duty applications?

**Wahlers:** Yes. OCAP is better when you're dealing with applications like the EPG--applications that go into the set-top box. OCAP allows a cable operator to download into the box the entire range of applications of interest to him. Not just content-enhancement apps, but any type of app, including resident apps. Enabling this involves clearing significant technological hurdles, and I think there's still more work that needs to be done. Nevertheless, this capability means that OCAP is a significant improvement over MHP--and one has to question whether MHP will really allow set-top boxes that are targeted for more than content-enhancement to be successfully offered in retail. Obviously I have a vested interest in OCAP, but I do believe strongly that this additional functionality that it offers is very important.

**[itvt]:** Is OCAP an interim solution, or do you think it is a spec that will be around for a long time?

**Wahlers:** The consumer electronics industry is really what OCAP is targeted at: the cable industry is saying to the consumer electronics industry, "If you build a box that has a software environment and hook it into our network, assuming all the other protocols are supported, it'll play video, it'll work with us." As you know, the CE industry can't change very quickly, and the cable industry has certainly put set-tops into people's homes, expecting them to be there for 6, 8, or even 10 years. So OCAP will be around for a while.

**Malcy:** It's also a question of legacy TV's. If you put a TV with OCAP out in the field, it's got to work 10, 12, 15 years. That's as long as a TV lasts.

**[itvt]:** Do you think OCAP will grow with the deployment of HDTV set-top boxes?

**Wahlers:** I think it can only grow with that. Apparently HD is bringing not only greater resolution but a range of interesting applications that require the memory and performance of a software environment like OCAP.

**[itvt]:** How could the cable industry be more aggressive in moving towards OCAP?

**Wahlers:** With the disclaimer that I don't work in the cable industry and am still learning about the cable infrastructure and technology, I think transitioning to true retail set-tops overnight is very difficult. There are serious issues with enabling OpenCable on networks that contain legacy boxes. A big first step would be to put OCAP into leased boxes that have sufficient horsepower, but to delay other changes to the network. Incrementally, over time, they can then move toward OpenCable network protocols. The network would still be closed initially, but this would allow a more manageable transition toward retail. Customers aren't just going to throw away their old cable set-top boxes, so they must inter-operate.

**[itvt]:** Do you feel that HTML has a role to play in the set-top box environment?

**Wahlers:** I personally am not a very strong fan of HTML. My feeling is that HTML in set-tops has been a poor performer and, as for the argument that it could promote content development because there's this wealth of Web-centric developers out there who could jump in and apply their HTML know-how to TV, I don't believe it. I think that content people will use the tool that you give them, and that the experience and quality of content that's meant for the TV is different from content that's meant for the PC, regardless of whether you use HTML, Java, or whatever the technology is. I think that, in order for interactive

multimedia to be successful, its quality has to be on a par with the digital video content that it's being displayed over. If you're going to invest millions of dollars in a piece of video content, and then put a schlocky HTML banner over the top of it, the discrepancy in quality will be glaringly obvious. Now, Java doesn't really buy you much more--other than maybe a finer level of control, more control of the exact look-and-feel. For the content people I talk to, this is an issue; and certainly 2 or 3 years ago there was some momentum and some interest in ATVEF and some of the other HTML-based standards. But my perception is that these technologies haven't proven that they can overcome their weaknesses, haven't really overcome the fact that they're not designed for a TV-centric viewing device, and therefore are of limited use. We should use Web protocols where applicable. Efforts to define an XML subset, used for presentation by content-based applications, makes a lot of sense to me; but HTML is a misfit for resident applications like an EPG. If Java is the answer for delivering an EPG, and Java can do anything HTML can do, then an HTML engine is just redundant in my mind. At one point, people thought ITV was all going to be about putting the Web on the TV, but I think most people would now say that that model hasn't been very successful.

**Malcy:** I think one problem with the Web-on-TV model is that, with TV, people are used to an immediate response: people are used to clicking and immediately seeing the channel change. Nobody's going to wait for a Web site to resolve.

**[itvt]:** A number of cable operators are beginning to roll out PVR. Are you doing any work in the PVR space?

**Wahlers:** We definitely have a very strong interest in PVR.

**[itvt]:** The PVR platforms or the applications that drive them?

**Wahlers:** The platforms themselves. We're assisting companies that are building stand-alone set-top boxes, and companies that are building home-gateway-type devices that serve video off one central box in the home to multiple clients.

**[itvt]:** Presumably the work you're doing with OCAP will be applicable here as well, right?

**Wahlers:** DVR boxes definitely have the performance and memory resources that are required to run OCAP. In general, we think that PVR technology is one of the things that will drive cable companies and their subscribers to buy new boxes. We're committed to PVR, and we're currently working with customers and building our own PVR products that are based both on locally stored content and network-stored content. We're also very interested in digital rights questions: one company we're working with, NDS, has a concept called Secure Video Processor (SVP), which is something we think has a lot of merit. It allows a content producer to encrypt content at the source, and that content then doesn't get de-encrypted until almost to the eyeball, so as to speak. We have been assisting them and trying to introduce that concept into the industry.

**Malcy:** It maintains protection for the copyright holder, but still ensures that the customer has fair use of that content.

**[itvt]:** In your opinion, what's the current status of relations between the cable operators and the consumer electronics industry. Are they growing more friendly?

**Wahlers:** I would definitely say that the relationship is growing more friendly: they just came out with an - MOU on Uni-Directional Digital Devices.

**Malcy:** : I was one of the lead negotiators on that 3 or 4 years ago while working in the CE industry, and saw the whole thing fall apart. But now it is all back together again. They've announced a unidirectional

specification. I believe that is a giant leap, and I think it's a very positive thing that they're able to work together again.

**[itvt]:** To what extent do you think that cable operators are hesitant to comply with OCAP because they don't want to lose their set-top-box-leasing business to retail?

**Wahlers:** Today, I don't think the MSOs think of set-top-box-leasing as a business, but more as a necessary evil. The CE and the cable industries have struggled together to deliver OpenCable to market. The OpenCable software specification, OCAP, opens up the opportunity to deliver advanced services. I do not think OpenCable without OCAP is sufficiently compelling to encourage retail, and thus progress to this point has been limited. Without OCAP, OpenCable is just more cost and lost functionality to the consumer. There are many issues that make the transition from leased set-top to retail complex, but there are as many arguments for moving away from the leasing model as there are for staying with it. However, I think that, while the cable and consumer electronics industries have in the past sometimes been in conflict, they have for the most part tried to work with each other. I think some small pockets of the cable industry still want to preserve their leasing business, but in general I think they have accepted the inevitable and now look forward to the day when retail takes care of the set-top box, and it is no longer the operators' problem. Of course, the transition to a retail model will involve some difficulties: while OCAP was originally intended to enable an immediate transition to the retail model, I think some people are now looking at it and thinking that that transition will be in stages. At any rate, I think the cable and CE industries are communicating a lot better now, and that the CE industry now has a much better understanding of the issues faced by the cable operators--and vice versa. We see a role for Vidiom helping the CE companies to understand some of the issues and helping them to develop technology that is more useful and acceptable to the cable industry.

**Malcy:** I have definitely noticed a new spirit of cooperation in the past year between the 2 industries.

**Wahlers:** Certainly CableLabs has been at the forefront of that: Dick Green and his group have been trying hard to pull everything together. Even though you are right that OCAP might not now be at the level of deployment that some had hoped, over the past 6 months I've seen some very strong signs that the cable industry is committed to it. We're putting a lot of our company's efforts into OCAP, because we expect it will become a big success in the next 1 to 3 years.

**[itvt]:** From a personal perspective, what is it that makes you want to work in the interactive TV space?

**Wahlers:** I think what got me interested was the educational aspect. Once we figure out all the technological issues, get ITV out there and get somebody to pay for it (and I think entertainment applications are what people will initially pay for), I think it will be a very useful tool for educating people, enabling remote learning and all kinds of things. I think it makes sense to piggyback off of the entertainment industry to get ITV out there; however, my personal interest is more in using ITV for educational purposes. \*\*\*