CNS INDUSTRY PANEL 2012

10 industry experts gather around a boardroom table to discuss and debate topics ranging from the green movement and the life expectancy of Cat 6A to the changing role of consultants.

The Panel: from l. to r. seated: Bill Weekes, managing partner, Fancom Communications Technology Consulting, Valerie Maguire, global sales engineer for The Siemon Company, Henry Franc, premises specialist (data centres) at Belden, Peter Newman, senior director, international business development at Leviton Network Solutions; standing: Rob Stevenson, communications division manager with Guild Electric, Robert Horne, executive vice president with The Attain Group, Paul Kish, director, systems and standards at Belden, Rick Boyd, general manager Marcomm (Toronto), Paul Barker, editor CNS Magazine, Brantz Myers, director of healthcare business development at Cisco Systems Canada, and Peter Sharp, senior telecommunications consultant, IBI Group.

Photos by John G. Smith

BARKER: I would like to welcome everyone to the third industry panel CNS has organized. I'll start with an observation from Peter Sharp. In a recent e-mail to me he mentioned that IT is seeping deeper and deeper into the fabric of business and, as a result, cable is becoming less visible and taken for granted. He also wondered if this is a threat to the industry. Is it? Peter, let's start with you.

SHARP: It's an interesting development. The business that we're in involves developing fairly complex, elaborate buildings and more and more of those buildings have IT components in them.

But there's another aspect, and that is low-voltage lighting. It is now at a level where a POE service contains enough power to provide more than adequate lighting systems in an office or industrial space.

What this tells me is that the application for cabling goes far beyond just IT applications. It tells me that once upon a time that communications was over wired and then it moved over wireless, and as wireless became more ubiquitous then the need for cabling dropped off.

And, I think that drop off as been fairly evident, but now with the ability to deliver more power over the horizontal cabling — the structured cablings system — and more importantly the ability for some end devices to perform the function on much, much less power, it now changes the focus on the way the structured cabling is being contemplated in a building and being deployed in a building.

Why do I think that this might be a threat to the industry? I don't think it's going to go away, in fact I think it's going to improve the survivability of structured cabling. But what I do see happening is that it's going to cease to be a technology that needs to be understood in order to be installed properly. I think there's going to be a technology that, for want of a better word, the 'cowboys' are going to get their hands on and it's going to be a bit more difficult to control. I'm wondering if in fact we're going to see a change in the way that structured cabling is implemented over the next few years.

BARKER: Alright. Who would like to respond to that? Mr. Boyd?

BOYD: Why me? Seriously, those are good observations. My take on it would be that I'm very happy that all these new systems are running over structured cabling, and low-voltage cabling in particular. I'm a cabling installer, so I really don't care what runs on it as long as people need it. Some of your observations I would take a little issue with, one of them being the drop-off because of wireless.

I honestly haven't seen a drop-off because of wireless, because wireless still seems to be a niche application now. When you're building buildings you're still cabling them. But they're adding wireless drops in a lot of infrastructure as well. I've personally never seen a completely wireless building or situation, so I haven't really seen a drop off. The biggest drop-off for us in the industry has been the Voice over IP progression because now people are doing one drop instead of the three or four to the workstation that we used to do. That's probably hit us harder than the wireless situation.

I'm wondering if we are going to see a change in the way that structured cabling is implemented over the next few years.

- SHARP

Because of all these new technologies it has actually heightened the awareness of businesses to the importance of structured cabling and today it's getting more attention than it used to, and I think that attention is driving people to the decision that "hey, we need to have this done properly," more so than it ever has, instead of just saying, "what's the bottom line number, let's do it."

Hopefully it's going to bring us back to where we get in front of the end users and be able to explain why they should go with a particular contractor or a manufacturer over someone else. That's my short answer.

FRANC: I think everybody takes it for granted. In the past, it was almost as if we had to justify cabling. Are you going to go with copper, or with fiber, or are you going to go with wireless — it was almost like competing media. I think now everybody realizes you do need that technology infrastructure and they're putting it in, so instead of justifying our existence, I think what we're doing is having more meaningful discussions with clients.

To Rick's point, instead of just putting in a blanket spec —"I'm going to put 5e for everything or 6a for everything, or fiber for everything" —people are starting to look at it and say, 'you know, 5e is great for this, 6a is great for that, and fiber is going to be the solution here.'

We're having meaningful discussions, not about technology for the sake of technology, which too often happened in the past; we're finally linking the technology to help meet the business goals, which is really why they're having those discussions with us. They don't really care about cabling, they care about enabling their business and we're finally part of the discussion and maybe the visibility is perceived to be less because we're not arguing about it anymore, we're now at the table, which I think is a wonderful thing.

BARKER: Let's move on to question two. Further to what Henry was talking about, how are converging non-data applications such as building automation systems, surveillance and broadband video changing the industry? Pete?

NEWMAN: My initial reaction when I read the question was, we have always been taken for granted. It's like the sub-floor or the drywall, until it fails no one cares, apart from the guys who sell it. We make our living day to day designing it, selling it or writing the standards for it, of course it's important to us. Talk to a building owner or an end-user who's using the cabling system, as long as they plug their computer in and it works, they are not thinking about what's behind the wall or up in the ceiling.

But cabling is not just in IT anymore, it's in facilities management, building management, operations, and everybody's going to get to touch the infrastructure now because it's going to affect them.

The way policies are implemented, the way security is implemented, everything is going to change, there's going to be more heightened awareness. I think it is good for the industry.

There is going to be a heightened awareness about structured cabling and it will be good for the industry.

- NEWMAN

MYERS: I'm going to tie one and two together if that's alright. I spend all my time thinking about the healthcare industry, in terms of how Cisco can work with it, and what we found is a move on the administrative side of healthcare to more cloud-based style services.

I think you'll find this across the board in industry. You've got operational business activities more and more being commoditized and moved into Software as a Service or cloud service. In healthcare we're seeing that trend. In addition, on the clinical side where clinical devices that used to be standalone patient attached devices that a nurse or a doctor would take a measurement from and manually put into a record system are now going on the network and becoming life-critical systems.

And initially when we started to see this, we saw people with tablets — clinicians with tablets — giving the right information, in the right format at the right time to the right patient, information in from traditional systems. Those traditional systems are now feeding those patient information systems, because things like infusion pumps and ECG machines and diagnostic radiology machines are now going on the network.

They're also going on the network in a wireless way. We've seen facilities who once said, "never wireless because we can't trust it," start to flip over about 18 to 24 months ago to say "wireless will be our primary mode of communication for mobile patient facing applications." We have to remind them that all of the conservative reasons that (they) said "no" to wireless in the past means they should deploy a wired infrastructure for these life-critical systems.

The convenience of wireless is there, it works great most of the time, but when you've got a radio-tough environment, full of, in some cases, heating applications that are microwave driven, or microwave ovens for heating, or even just the heavy steel-reinforced concrete that you have in industrial institutional complexes like hospitals, make wireless challenging. The amount of wire there in some cases has increased because of the number of new devices that are involved in patient care giving.

MAGUIRE: Surveillance was the first testing of the waters to see how a building automation system performed in an IP-based environment.

I think that the test was a brilliant success and, as a result, we're starting to see other building automation services — access control, HVAC, in some cases fire alarm — looking to take advantage of the features that an IP-based system offers.

One of the key advantages of converged networks ties into energy conservation. If I can connect all of my building automation services, then I have a way to do metering and implement efficiencies into my system. I can do energy management. I can respond to employee's needs in the building workspace. The trend here is for building automation systems

to gradually become IP-enabled and technology like integrated building management software systems, which provide a platform for allowing IP-based and non-IP-based building automation systems to communicate, is supporting that trend.

Once we get these building systems communicating with each other, I think we're going to start rapidly adopting control devices and BAS systems that are completely IP-addressable and use IP-based technology.

One of the potential threats that Peter mentioned was that IT becoming more integrated into the building tends to make it less visible and there's a concern that maybe the quality of the installations may start to degrade.

My belief is that, while the IT network may be less visible, it's actually more vital. These systems are more complex and the nature of the complexity is going to force the capabilities and the experience of the installer to have to grow to a new level to match the sophistication of these systems that are transmitting more than just voice and data.

BARKER: Rob do you want to pick up from that?

STEVENSON: Our experience with integrating some of these systems with building access and metering and everything else is that the vendors of those systems are perfectly happy to abdicate their responsibility for the structured cabling that's going to run their systems, so by default it's going to go to the IT group to look after that.

And the end-users that want to leverage a lot of the features that are now available in these systems are going to push for the IT to manage those systems so that they can make use of all the additional features that are available.

Going back to Peter's comment, he referred to a fear of the 'cowboys' taking over, but, you know, the IT people are going to be the ones that are setting the standards and driving what actually gets installed, and I think that's a benefit to and for us.

BARKER: Bill, maybe you can jump in. As a consultant, what would your response be to the question, and then we'll also go over to Robert for more on the consulting perspective.

WEEKES: I don't think there's a simple answer. It's as complex as the world that we live in.

Decision making for a lot of firms is pushed higher up in the organization now, so that the people who are actually doing the work have less decision making authority than they've had because anything involving spending money naturally has risen, yet the people higher up don't necessarily have the background of information to make that decision.

What makes sense is to link all main control systems together over a network. That is what we are seeing.

- HORNE

Having said that, I would say our business has evolved massively and probably 70-80% of every project we work on right now has some form of IP-based security, and we are using that to help drive structured cabling.

I think that structured cabling will be alive and well 50 years from now, but I do think it will be hidden to the overwhelming vast majority of people who use it.

BARKER: Robert, what are your thoughts?

HORNE: It's a complicated question, because as a firm that does a lot of low-voltage designs, primarily (it) was always voice and data infrastructure and then we moved into audio-visual and security and access control systems. Now we're starting to get probed by architects and end-users wondering if we do building automation integration?"

In theory, many think we can just integrate everything and lump it all into a structured cabling system, but that's not — I'm sure people know this — how it really happens, and I can't see a wholesale jump to that in the near future.

The fact is that in some cases it just doesn't make sense. What makes sense is to link all main control systems together over a network, and that's what we're seeing.

KISH: There are a couple of points that haven't been yet fully addressed. When Peter suggested that cabling is not visible in many of these discussions and their talking about applications at the higher level, I sort of smiled when I heard that. That's not a

threat, it's an accomplishment.

The reality is that people only hear about cabling if there are problems. The second point I want to make is that non-data applications such as video use a lot of bandwidth, which means you have to design your network appropriately.

What type of storage do I need? Does it have adequate priority? Do I need a separate network? Having the bandwidth that you need and the cabling system to support that bandwidth is the main issue that you have to think about.

BARKER: The complexities and the broadening of the horizon, ties into next question. What expertise must the modern installer possess and are we facing an acute skills shortage in both the structured cabling and networking sectors?

STEVENSON: From a structured cabling installer perspective I may not be the right one to ask, because we're a union shop and we don't have a lot of staff turnover. We've got a lot of installers that have been with us for 10, 15, 20 years, and our challenge is to make sure that we're constantly upgrading and training and making sure that they're up to speed on things.

I think in other sectors there may be more challenges with finding enough trained labour. What I am seeing is that the skill set is changing with respect to how much knowledge even a cable installer has to have about the rest of the infrastructure. An example is switching. They don't have to be able to program switches or anything like that, but they have to be able to recognize what the overall connectivity of the devices their installing for is, and they are being called upon to troubleshoot and bring together more than just the cabling skills.

MAGUIRE: While I feel that installation practices haven't changed significantly, the consequences of poor installation practices are much greater today. And, I think this is where knowledge comes in. Today's installers must understand very complex measurement methods and the ramifications of poor installation practices.

And, this is for optical fiber media, as well as copper twisted-pair. For example, in the optical fiber arena, we have new test methods that use encircled flux technology to improve multimode measurements. On the copper side of things, we have alien cross-talk testing, which is not just "press auto-test now"; it's link my hand-held tester to a computer, create a database, and collect lots of measurements. These are very sophisticated diagnostic methods that our installers need to be aware of.

IT people are going to be the ones that set the standards and drive what actually gets installed.

- STEVENSON

Rob, you made a comment about the installer actually having an understanding of the entire network, and that's very important with respect to new optical fiber applications. For example, 40 and 100 Gig Ethernet over multimode fiber requires more than two fibers for transmission, so we have very sophisticated array polarity that we need to keep in mind.

There are actually three TIA methods for array polarity. And, we also need to be aware of interfaces, such as the MPO, that use alignment pins. Where are the pins located? When do you use them? When do you not use them? What do I do if I bend a pin?

An installer needs to understand these technical issues, because not understanding them has very severe ramifications in terms of catching a problem in time, or introducing a problem inadvertently that can delay an entire building's deployment.

FRANC: I concur. I'm not a technician anymore, thank goodness. I don't think I could handle the job anymore because it is becoming far more complex. You see a growing trend of toolless or easier to put together solutions, and people often make the mistake of thinking the role of technician is going away. And it's not just about installation practices, we're talking about how to pull a cable, how to put in a piece of conduit, that's pretty standard.

But really it's not about just technique anymore, it's about testing and tools and training and knowing how to use these

things. The modern technician has got to make a computer dance; has got to work with very sophisticated field test gear.

HORNE: I'd like to echo what both Valerie and Henry said with respect to technicians. From someone who writes specifications, I know that I've already started tightening all my specifications around testing specifically, because there's a huge deficiency in the market with respect to field testing by technicians.

And I can't speak for anyone else, just the jobs that I've seen, but I can't believe that it's only located in one geographic area. I think that in general it's been — and I don't blame the installation firms, because they have a job to do, but typically — we've had so much headroom to play with — we just plug and play, snap it in, test and away we go. Things have changed and the headroom on everything is so small we don't have any room for error.

I was just relating this story to Bill and I talked to Paul Kish about this at a recent BICSI conference. I get test results back with the wrong settings, they're not using the right jumper reference, they're using the wrong settings in the fiber. I think there is a need, for sure, in the industry for better training of technicians.

WEEKES: Let's say, for example, it's a project with 10 IP cameras. Who's going to prime that job? Is it the camera vendor? Is it the electrician? Who's going in to install all of that conduit and look after the power? Is it the data cabling contractor, who's supposed to specialize in data cabling? Now all of the sudden we bring in three contractors to let each specialist work on his area on the project and that turns into a $50,000 project when it shouldn't have been more than $15,000.

The person who's certified to actually work with, for the sake of argument, an access camera and knows how to make that work, doesn't mean they know anything about the cable. I would argue that they know very, very little. In the old world they got away with it. That's really the challenge that we're seeing on a lot of our projects, and we try to take the time to educate the owner, but then all of the sudden you put your RFP out and then everybody starts coming back in a different way.

We have a contractor here in Toronto doing one of our contracts in Kingston, yet the contractor from Toronto doesn't show up. They've got all of the accreditations, but they've subcontracted everybody and their uncle out in Kingston who wouldn't know what a certification piece of paper looks like, let alone get a certification, and we have to deal with the problems of that. I don't know how we address it, but in some way, shape or form, I want to toughen up my specs to make sure that when I say somebody is certified and the manufacturer says, "Bill, if you put this in, you will get a person who knows how to test fiber optic cable." I can quote the standards to which I want it tested to, but that doesn't mean the person going out and doing it, despite having a moniker that says I'm certified by XYZ manufacturer, knows anything about it and that's a challenge.

SHARP: If I could throw in my, not two cents, but half a dollar in here. I think the questions — your questions for this session, Paul — are very good because they're all rich. They've got multiple aspects to them. The question of what expertise must the modern installer possess is one I relate to. Is there a shortage of skills in the networking sector? That's a whole other issue.

Speaking to the first one, I do think the points that have been raised here about the difficulty or the simplicity of installing

a commodity system can be quickly overlooked. They can be the process of specifying carefully, the standards that need to be complied with can be easily undermined simply by the technique that Bill is talking about: substitution — the bait and switch process of gaining a job.

At IBI we've taken a fairly proactive approach to this: if you're going to have proof of performance, get the proof of performance not only on the system, but also the people doing the job, and get that as early as possible in the process. And so, as part of my process, I ask for test results of the cables before they get installed.

Now, what am I doing? I'm doing two things here. One, I'm testing for the gray market. Is the product that's being installed actually being manufactured by the company who's on the label? But secondly, I'm testing the ability of the installing contractor to follow instructions, and secondly can they use a test machine. And if they do send a test machine reports through, and as someone earlier said, the set up for the test can often be completely wrong — well, it shows they don't know how to use a test machine.

So the earlier in the process that you can find where these shortcomings are, the earlier you can fix them.

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>
> **- FRANC**

BARKER: Next question: how has the role of the consultant changed over the past decade? Val?

MAGUIRE: Thank you for indulging me on this topic, Paul. There were a couple of comments from Rob and Rick here defending the skills that a quality installer brings to a project and, at the beginning of this session, Peter Sharp mentioned that one of the challenges that consultants have is dealing with 'cowboy' contractors. I'd like to challenge that and say that one of the obstacles that Rob and Rick face is having to deal with 'cowboy' consultants.

I see many situations where BIS specifications are simply replicated and duplicated; spec to spec to spec looks identical. And it's interesting, I have a quote here from the Continental Automated Building Associate, CABA, and they tell us that one of the biggest hurdles to the adoption and growth of integrated technologies is the inability to demonstrate and convince the clients of the ROI of these systems. I think the reason we're not being successful here is we don't have consultants that are doing what Bill discussed earlier; they're not revising their specification based on what they learned on the last project.

People were over-provisioning medical equipment because they just couldn't find what they wanted when they needed it.

- MYERS

SHARP: You're absolutely right, it turns consulting into a commodity, which by definition it shouldn't be. Each situation is unique and therefore requires consultative services, but, again, it's the almighty dollar. The owner invariably goes for the cheapest price, not the service that has the greatest value.

I think the role of the consultant as we see it today is dead. I think that the consultant in Europe tends to perform quite a different role than the consultant in North America, and I think the way in North America is going to follow the way of Europe and the rest of the world.

In Europe, the consultant goes in at the early stages, flushes out what the basic requirements are, produces a design build spec, issues it to a design-build contractor, and then acts as the owner's engineer during construction, which is radically different than design-tender-build approach that the consultant follows today, where you hope to take a lot of the experiences, the pain, the suffering, the whip marks that the consultant has gained through the years of experience. All of those benefits are lost if all that they do is to produce a design-build specification.

It's our experience that many owners will go from one to the other and back. They'll go from a design-tender-build to design-build and then back to design-tender-build. Why? Because the clients that we tend to deal with and, I think, around this table, tend to be more specialty driven, rather than just plain vanilla empty box-type building or installations. A hospital is far from an empty box, it's a very sophisticated space.

There are design-build specs for hospitals and the end result is the owner will spend more time fixing the problems than would've been spent on the consultant's fees, 10 times more. But nevertheless I hold to the position that in terms of what the consultant does, it's less and less and less intelligence and more route, route, route.

BARKER: Any comments?

MYERS: Well, just because you said the word healthcare I have to comment. We're finding that we're finally being introduced into the planning cycle very early now, in some of the new hospital builds, where the industry has recognized the impact of IT on physical workflows.

And an example would be a clinical workflow for how you manage a patient from being admitted to a hospital, through the care they are given, to being released, can be impacted by things like location-based services to find a wheelchair for the patient during the exit process or admission process more efficiently, which means that you can maybe change the way you manage those assets.

People were over-provisioning medical equipment because they just couldn't find what they wanted when they needed it, so they would buy extras which are much more expensive than, again, applying a location model that says: find me that unused infusion pump and get it over to this patient.

And even the things in the lavatory are going on the network. We're finding fluid levels can be assessed in hand soap and sanitizer dispensers, which means that you can impact how many people you have pushing carts around to replenish those every day, and the cost model around how many people you have looking at all. and the storage facilities you have to store these replenishables can be impacted.

It means that these new ways of looking at workflows can impact the design of a facility so you actually have to insert thinking around network-based workflows at the architectural, at the design level before you even draw the pictures of the building.

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>
> **- NEWMAN**

doesn't make a damn bit of difference if the overall cost went up in their term of office.

And so it's very short-sighted thinking, but nevertheless it's pervasive. It takes a brave person, a brave CEO and a brave CFO in any organization to say, "No, we'll spend more now because the return on investment will be better later." It doesn't happen in the automotive business. You won't get them to spend a nickel more this year than they have to, because, by their argument, they might not be here next year so there are no efficiencies to gain.

SHARP: But it's all money driven because the capital cost of putting in those facilities that you've eloquently described has to be paid for, and it has to be paid for out of the cost of borrowing the money in order to build the facility. But if the cost of borrowing the money is too high then it doesn't get done.

And in the business world it's a question of return on investment and shareholder value. In your world it's a question of mean time between terms of office for the local politician, even though the ongoing operationa cost may go down, it

BARKER: Let's turn our attention to virtualization and the data centre. How big of a game changer is it going to be?

MAGUIRE: I would like to address this from a structured cabling perspective and I think it is a big game changer. Virtualization should help to reverse a wasteful trend in this industry where we're dedicating servers to specific applications. A common practice is to connect dedicated servers to a dedicated switch located in the same rack with a cord. This dedicated switch

Discussion Time: Henry Franc (centre right) makes a point during the taping of the third installment of our CNS industry panel held in November. Missing in the photo, but very much there, are telecommunications consultants Bill Weekes and Peter Sharp.

deployment configuration often leads to an oversubscription of switch ports and there are additional maintenance costs because of the elevated port counts.

In a virtualized system, any server can support any application. And, with a structured cabling system, any switch can be connected to any server for the ultimate in infrastructure flexibility. I think we're going to see an increasing trend to deploy and specify structured data centre cabling systems that must comply with cabling Standards such as soon-to-be-published TIA-942-A.

I'm really encouraged by virtualization, I think this is something that offers significant benefits for the end user and highlights the flexibility of structured cabling in general.

My belief is that, while the IT network may be less visible, it's actually more vital.

- MAGUIRE

KISH: When we're looking at virtualized servers we're using them in a way to support many more users, because the traffic is now residing on it and we're running the servers at near full — or 80% — capacity. When you take virtualized CPUs, the high-end CPUs, and then the memory requirements, if they're running near full capability they have a lot of I/O functions, 100,000 input/output operations per second. And if you're using them in that mode, and also using shared storage instead of a physical disk on the machine, then you're going to have to have a network that's able to support that. And for that example that I gave, just four virtual CPUs and serving any users getting into it takes about 9 Gbps, so your server switch connection now is at 10 Gbps. It's more efficient, you're using a higher density of servers in a rack. It's going to save money in the long run, but at the same time you need a network that's able to handle it. You're talking about 10 Gig connections switch to server, 40 Gig uplinks, and in the backbone 100 Gig. And it's coming relatively quickly.

MAGUIRE: Well stated.

MYERS: It's making its way actually into the virtual hosts as well. It's taking things off the floor and moves them into the compute fabric. We've actually done this, we've taken some of our physical switches and working with VMWare made virtual appliances that allow you to take that physical switch and make it disappear. That will probably put a little pressure on the cabling business as well. It will take some of that away.

At the same time though it's going to step up the game on that device that sits in that rack. It's going to be very hungry for traffic.

Virtualization and the cloud are hugely powerful applications. I mean, this is the kind of stuff we should have been doing a long time ago, and the power and the possibilities are there. And it might mean a few less cables, and less patch cords. But, I think it's going back to what we were talking about earlier. You have to pay more attention to your infrastructure. If you have all this great power, and all this great capability, you have that great responsibility and the great infrastructure to support it.

If you have everything on the cloud, and, you're right, you're taking it off the floor, but you're putting it into your cloud data centre somewhere, so that data centres are becoming much more critical. You can't take them for granted and that means all those, sort of fly-by-night techniques, whether it's cheap manufacturer, cheap installation, cheap consulting, won't fly in the virtualization cloud world.

NEWMAN: It's driving a lot more of the 10 Gig inter–connects. I think it's going to drive a lot more pre-terminated assemblies and plug-and-play roll outs.

It allows the data centres to be turned up and turned down a lot faster. The ongoing talk about Open Flow as it relates to virtualized storage could drive an accelerated hardware change-out, and that in turn could drive new cabling. I think this affects lots of things, it also affects consultants in terms of capacity planning for data centres. It used to be common to just throw in a tonne of capacity and don't worry about it, because everything was a dedicated machine, designers just needed to make sure there was plenty of capacity. Virtualization changes the approach to capacity planning.

SHARP: The way that virtualization is effecting our industry is because of the weight density. As an example, we have to do structural studies of the buildings in which this equipment is going to go, because we've had several situations where clients have gone through the floor, quite literally.

BARKER: Bill, I know you talked a great deal about the green movement at our first panel two years ago. The question being: Is the green movement growing stagnant or in decline?

WEEKES: My fear two years ago was that the RCDD or the telecommunications engineer would be kind of left out of the process.

When the architects and the engineering teams get together there are two design tracks. There are those people who are actually responsible for designing the building, and then there's a subset of engineers who actually work on the LEED requirements for the building — whether it's silver, platinum, whatever it happens to be. Unfortunately, I don't get invited to those second meetings anymore.

Cabling will be alive and well 50 years from now, but it will continue to be hidden to the vast majority of people who use it.

- WEEKES

From the owner's perspective, from the architect's perspective, in terms of the green building, I don't bring any value. And so, it's been a bitter pill to swallow, to be very honest with you, because I do think there's things that we can do, but from the pure scorecard of getting LEED points, we don't have anything and so why would they pay for their telecom consultant to sit in on that meeting for two hours.

FRANC: I agree with you whole-heartedly, because I look at that checklist, scorecard as marketing green, and I look at some of the things we're talking about with virtualization as real green. I was involved with a data centre, same thing as you, there's nothing at the table for us to get a point by whomever's marketing organization. But they got points for a lights-out data centre for putting in bike racks, in a facility that's 100 kilometres away from a city centre. And if they don't want to invite me to that game-playing table, I'm perfectly happy, because the operational folks invited me to the table and said, "What can you do to help me?"

Paul hit it, it's the power, it's the density, it's the cooling. "How can you help me with the power, and the density and the cooling, to get real green?" To Brantz's point, about operational efficiencies, 'let's drive our hardware costs down. Let's make our usage more efficient.

WEEKES: I don't disagree. The benefit of going to the LEED meeting is you're talking with the leadership on the team. So if you're going to exert influence to help the other group, and again, I come back to where do I spend my time. I try to spend more of my time with the leadership of organizations to kind of clear the track so we can do the rest of the work that we need to do in a proper way. That's where I want to spend my time.

The leadership of the organization doesn't come to the operation meetings. So I can go there. I went to Germany this year and we studied how they were doing cooling in the data centres, and we've tried to bring that back to North America, and in order to get people to pay that extra $50,000 or $100,000 to do it this way, I need to be at this meeting. And so now my influence in these other meetings, it's appreciated, it's understood, and then, they have to try to fight the upstream currents, if you will, within their organizations to say, here's a complete different way of doing it.

We're going to be finishing, a project in Victoria and Vancouver Island very shortly. What happened at the beginning kick-off meeting, knowing that I was going to be precluded from these other meetings, I got it out on the table right away. "If you really want to go green, this is the way we want to do cooling. I don't want to cool the room, I want to cool the equipment." And the guy goes, "Well, shouldn't we be doing that anyways?" I go, "Right now, you're going to be cooling that whole room. If you want to hang beef in there beside your servers, go ahead, because you'll be able to do that, that's what you're doing." But I haven't been to another LEED meeting. OK? But at least I got approval at

a very high level early on, now I can tell the mechanical engineer, and I can tell the electrical engineer, here are some of the things we're going to do, because we received buy in.

At the end of the day all the president wants to know is, "Am I getting my platinum building? Am I getting a gold building? And how much is going to cost me to get from gold to platinum? What do I have to do to get two more points or whatever it is to get over the line?"

> **Virtualization is an attempt to reverse a trend in this industry that's wasteful, where we're dedicating servers to specific applications.**
>
> **- MAGUIRE**

BARKER: Would you say then the movement has not stalled?

WEEKES: Absolutely. All of the mechanical people are moving forward, the way ASHRAE is working. They're doing a phenomenal job. The electrical engineering industry is doing a phenomenal job. Our industry, we haven't built that bridge, and granted it may only be a marketing bridge, it may only be a perception thing. We have not built that bridge with the Green Building Council, or the Green Globes people, or whichever one of these organizations you want to talk about, where you need us there because we're going to get you that point. And it's not just us designing it in, it's now the contractor delivering that solution in such a way to make sure that point is gained through the whole process.

MYERS: I don't know that anyone really answered — we got right into the depth of this — but no one really answered the fundamental question: is it growing stagnant or in decline? I want to throw in a pretty direct answer. There was this real peak of interest around green about three years ago before the big recession hit.

People had all of these plans from 2005 through 2007, and then when the economy went south, the attention turned to

Brad Ling, Video Production Manager for Business Information Group, the publisher of CNS, conducts a sound check prior to the start of the filming of the panel. The first installment will appear on the magazine's Web site in February.

other things. Meanwhile, I think that it has percolated though, that it hasn't died.

That people took it seriously, and it got over that chasm, right? And we're now seeing many coalitions that are, in many cases, verticalized; there's a Canadian Green Healthcare Association, many of the hospitals around the country are joining it. I just received an e-mail last night with three or four new hospitals that have joined, and they are making very solid efforts around a lot of different areas, not just around power, but around how they manage their waste in hospitals, how you manage your nuclear medicine waste.

Do you really need to ship it expensively, or do you have room to do what they call delay and decay, is what they say in the nuke-med business. I throw that out as a really weird example of how you can manage green beyond the usual suspects.

And then vendors, our company and our competitors have taken an approach to weave energy management into everything we do, so that you can power down the phones that aren't being in use after hours and use sensors that would've only ever been used for, say, security systems, to now know whether people are in a building or not.

It means more network integration around things that we didn't used to think about like building automation and control and fire suppression and burglar alarm systems can now play a role in energy management.

I think it's alive and well.

NEWMAN: The word that I struggle with is stagnant, because I'd call it steady state. Like Brantz said the movement peaked, and now it's at a point where it's on people's minds when they're designing, and they're designing it in now not so much for the green marketing piece, but to save money, and you get the green for free. Everyone's trying to save energy and save money

I don't think we'll see a quantum change in the (green) market until we start to reuse the energy that might otherwise be wasted.

- SHARP

SHARP: I don't think we'll really see a quantum change in this market until we start to reuse the energy that might otherwise be wasted. I think we can reduce the amount of energy we use only to a certain extent. We can tweak the building management and do the systems integration so we turn the lights of if no one is present. We can do all of that, but I think really we're rearranging the deck chairs on the Titanic.

I think the real energy benefit, or the real green savings, green initiative will be the recovery of data centre energy which would otherwise just go out the window. And until we see some serious changes in that area, data centres will continue to consume more and more power, despite the best efforts of virtualization because the demand for CPU cycles is sort of on the hockey stick going up. I think there are some serious gains to be made by strategic alliances between the business that needs a data centre and the power it's going to consume, the business of the people that manufacture the power — and produce steam alongside, which can be used industrially — and the dirty heat that comes out of a data centre that could be reused in a facility such as a hospital that needs a continuous supply of hot water.

But until those strategic initiatives are taken, I don't really think we'll see any great gains in the green world.

HORNE: Buildings and their subsystems are only going to be integrated more and more to the point that buildings are a living system. The recent BICSI Fall Conference had some interesting presentations about building automation systems — the whole control of buildings and BM and things like that.

Really interesting stuff was mentioned, but as far as the rest of the infrastructure in a building, these systems are becoming more and more integrated. Why? Drive more efficiency and get more data to better control the systems, save energy and save cost for their clients.

We do a lot of work with the building and property management industry and the bottom line for them: "Is something going to cost me money. How much money can you save us? How can we lower operating costs?"

And, just like we're seeing all of these developments of applications to help drive business efficiencies, those applications are coming right into the building. I think that you will see a lot less of the barriers we saw before where people had silos: "No you're not touching our network, you're not coming on our network."

As energy costs go up and up, and they will, you'll see more and more push from the building industry professional who will say: "I want more efficient buildings, how can you help me?"

KISH: I just want to pick up on a point that Peter made about data centres. The Greening of the Data Centre is an article I wrote that talks about the efforts in the industry, looking at standardizing better practices to improve the efficiency in data centres. It's happening a lot. I think it's kind of a focus priority in the standards world.

They've defined measures of efficiency like PUE or DCIE or they're looking at traditional ways that data centres operated. They had, like 35% efficiency, and now they are trying to drive that up to 80% or more. In the end, it's going to have big payoffs for the operators, because they're going to save energy, and 9042a — the TIA standard, the new one that's coming out — it has a new section in there on energy efficiency. It explains practices that can be taken to improve it.

In terms of improved greening of the data centres and focusing on energy improvement, it is a big effort in the industry and it is driving a lot of the innovation and some of the products that are being offered there.

BARKER: The final question of the day: How much life is left in Category 6a?

KISH: When I saw that, the first thing that came to mind was why are we talking about the life left in 6a, it's just starting. Really, I mean the primary area where 6a is being used is for data centres, we recognize that there is a need — a growing need — for 10 Gig between the switch and server connections. One of the surveys — I can't remember which one — I think it was an Intel survey, revealed that an estimated 35% of the connections today are 10 Gig, and in the next three years that number is going to grow to 95%. And we see, especially now where 10GBase-T was slow to get off the ground because of some of the power consumption issues, we're now on the third generation 10GBase-T that's drawing 2 W or less for short distances. I think it has great potential to take off. People that are designing data centres today are putting in 6a cabling.

Non-data applications such as video use a lot of bandwidth, which means you have to design your network appropriately.

- KISH

MAGUIRE: I'd like to triple that thought and suggest that category 6a cabling is still in its infancy. I think it's got a usable life cycle of at least 10 years. I've seen the survey that Paul's referring to and the data that was submitted to the IEEE 802.3 folks during the call for interest for the 100 Gig copper project, and that info predicts over a million 10 Gig servers, not ports, but server units, to be shipping in the year 2020. So, I'm telling you I feel very comfortable with a 10 year usable life for 6a.

KISH: Maybe we can get a comment from Cisco on this. As an example, they offer two distinct systems in which one is based on 10GBase-T and the other one is Nexus which uses short-reach type patch cords and top of rack- designs. But both are being offered. Brantz, I don't know if you want to jump into that?

MYERS: Is that a healthcare question? (laughter)

FRANC: I'll turn it into one: Do you see healthcare data usage declining?

MYERS: Not at all.

FRANC: There are advances such as intelligent bedside TVs where you could see your telemetry of the patient. The patient can get their TV-on-demand, if they're going through rehab, they can get video-on-demand on how to do their rehab, how do to their exercises. Data usage is going up and up, and some proponents will say, "You're never going to need technology X, you're never going to need technology Y, you're never going to need technology Z." They always assume that as the human race we're going to stop consuming something.

When was the last time we started consuming less? When was the last time we started saying "You know what, that's too much information? You know what? I want less music, I want less video. I want less information?" I mean, literally my children who are only teenagers can't conceive of a day where they couldn't just go "Hey, I'm curious about something, I'm going to look it up on the Internet and I'm going to have a video about it." As opposed to back in the day where we'd have to stop and think about it, and make a trip to the library.

The modern technician has got to make a computer dance and work with sophisticated test gear.

- FRANC

MYERS: There is a point, though, about technologies having shorter lives as technology advances, so I'll just use an analogy which is 'out there', but I think everyone will get. The CD had about a 30 year life, the DVD had about a 20 year life, the Blu-ray DVD looks to have a very short life, to me, because of streaming technology. So this form factor has been the same the whole time. When Blu-ray came out — when it came out! — I wondered just how long are we actually going to be carrying physical discs around because everything is going to be streamed. I don't see that for 6a. I see wired networking advancing still and maybe there will be something after 6a, and maybe the life of 6a will be shorter than the 5 world, maybe, but it's not like it's going to be supplanted by something completely different, like Blu-ray is being supplanted by cloud streaming.

WEEKES: What is the context for the question?

BARKER: There wasn't one really. Frankly, I just threw it out there.

NEWMAN: If people think they don't need it now it's because they haven't developed the need, but that need is coming as the data centres get faster and as the backbone gets faster. Right now it's a backbone-type technology so the numbers aren't huge, but as it moves to the desk, it's going to grow.

SHARP: I think 6a is doomed.

NEWMAN: Good, an alternate point of view. 'Tell us why,' they cried.

SHARP: It's doomed because we're all in the business of delivering a service. And 6a delivers a service and that is 10 Gigs to the outlet. And I think in the data centre it will continue to provide that service and continue in the manner that we've been speaking.

But in terms of delivering service to the work area, 6a doesn't provide all the services that are needed. When you consider that with an increase in the gauge of the copper you can up it to about 100 VA which is the maximum that you can wire a Type 2 wiring system, then I think with 100 VA being delivered as Power-over-Ethernet then you'll have a whole reawakening of how services are delivered to the desk.

You probably won't need power to the desk. Your laptop, all your devices will be able to run on 100 VA, and so my prediction is that the cable will be called 16a, because 16 is about the gauge of the cable that you need to deliver 100 VA.

MAGUIRE: I disagree with you, and the Siemon Company contributed data to the HDBaseT Alliance, which recently published Amendment 1 addressing power over HDBaseT or POH, that demonstrates delivery of 100 W of power over category cabling. And what happens is, with all of the categories except for Category 7a, you just have to reduce the numbers of cables in a bundle to less than 100.

We'll still be able to support 100 Category 7a cables in a bundle without exceeding the 10 degree Fahrenheit temperature rise. And, heat dissipation for Category 6a is significantly better

than 5e and 6. So we have a 100 W application, it's published, and we have cabling that provides benefits. The key application for POH is Energy Star televisions supporting IPTV transmission.

KISH: One of the reasons for 6a or better cabling is to support more power right?

SHARP: That's what I think.

KISH: It's built in already with 6a. We've got a limit to 60 W, not 100 W today for a 100 cabled bundle, but I think that's conservative, many cable designs can do better than that.

SHARP: And depending upon what your ambient conditions are, you do have to de-rate if you've got larger bundles and the rest of it. All of which now requires a more engineered facility, which is one of the points that we've been talking about. Is it, because it's a commodity environment, you don't have to engineer the installation.

One of the reasons why you get a de-rating in power cables is because it's part of the Electrical Code, so therefore it has to be overseen by someone who is certified, indeed licensed, to be able to do that. We're out of that domain in this world.

KISH: The argument that you provided, saying that 6a is doomed because it doesn't have sufficient power and you may need 16 gauge, I think you just provided a good argument maybe why you don't want to run fiber to the desk. Compared to

SHARP: But it's not the 6a 10 Gig capability of 6a, it's the size of the copper conductor aspect of 6a that delivers the power.

KISH: But if you're going to go that way, you might as well provide both.

SHARP: Indeed. No, I agree. I agree.

MAGUIRE: And again to come back to the IPTV application, if you want to eliminate digitizing or the delay with channel zapping, which is the little nuisance delay when you switch channels, you're going to be talking about Gigabit Ethernet, maybe even 10 Gigabit Ethernet. So I think that for this emerging

Peter Sharp makes a point, while Peter Newman (left) listens intently. Behind the two of them is Adam Ledlow, an editor with the Business Information Group, who was involved in the production side of the panel.

technology—and it's video, it's interactive, high-definition, possibly three-dimensional video, supplying very high-density images, concurrent with power—we are going to need a 6a connection in everybody's house.

BOYD: Have you guys told the electricians that we're not going to need them? (laughter)

HORNE: Why would you completely reinvent an electrical distribution system? That's not going away.

MAGUIRE: Because the HDMI interface is licensed and you pay a very large royalty to use it. That is the driving factor. How much does an RJ-45 plug cost? How much does an HDMI cord cost? Twenty times more, 15 times more?

FRANC: I think we're coming back full circle to where we were at the beginning. This is a great time to be in the industry. Fifteen years ago the decision was easy: What are you going to do for your cabling and your network, not that there was much of a network 15 years ago? It was like, OK, so it's CAT-5e, it's done, and you forget about it.

I'm very happy that all these new systems are running over structured cabling and low-voltage cabling in particular.

- BOYD

We've had this great discussion and I think what we're finding out is that there's no one solution — there's no one magic bullet — so we're back to not taking things for granted, we have to put some effort and some thinking and invest our resources, because our knowledge base our own personal IP — intellectual property as opposed to Internet Protocol — is valuable again.

I love this discussion because it's putting value back into the hardware manufacturer, the cabling vendor, the consultant, the contractors and the end users.

BARKER: And let's not forget the media…

FRANC: And the media. It's everything. It's the holistic message, where you've got to think of everything together. And your solution for your car plant is not the same as it is for a hospital, and it's not the same as if you're a government agency.

MYERS: Henry, I agree with you, and I think that the stakes are getting so high that you can't keep going to the lowest cost bidder to get the job done.

FRANC: To Pete's point, it's not necessarily about the lowest price anymore, it's about the best price.

MYERS: It's about the best value, which is a combination of skills and quality, and getting what you paid for. Quality is defined by getting what you asked for, not more and not less, but getting exactly what you asked for.

BOYD: We can all agree on that here, but until the CEOs and CFOs of the world agree …

HORNE: That's our job to educate them, and show them those business cases, to show them where it does pay to have a proper spec that's properly weighted for tenders so that the right contractors get picked that have the right qualifications and benefits.

STEVENSON: Going back to the discussion we had about P3s, that's supposed to be the model of P3s is design-build and lets be innovative and let's put everything together. What we're seeing with a lot of them is, at the end of the day, the proposals come in and the one gets selected because it's 10% cheaper.

FRANC: But it's being put on paper, it's being recognized. "OK. I might be paying 10% less, but I'm giving up this, this and this." So, it's not perfect.

BOYD: There's an aside to that, though. When the P3s are done and Rob's company leaves, my guys are coming in and we're installing thousands of new drops that they didn't think they needed during the process. And you know how much more expensive those are after construction.

SHARP: Breaking the syndrome of the lowest bid, lowest cost though, is incredibly difficult. We have a client that we're working closely with. They've asked us to evaluate tenders on a fairly large job. We did evaluate, we used the criteria, the weighting assessment of merit versus price. We put that all out together and we came up with our recommendation. The recommendation was not the lowest price, and the number of times we have to defend that recommendation. "Well, how could you be recommending something when it's not the lowest price?"

> **You have operational business activities, more and more, being commoditized and moved into Software As A Service or cloud service**
>
> **- MYERS**

FRANC: You don't have to defend the recommendation, you can just say, that's my recommendation, they can chose to follow your advice or not.

SHARP: Of course, and that's what consultants are there for, to blame when things go wrong and to forget when things go right, but it's incredibly difficult to break the lowest price syndrome.

BOYD: In the '90s you'd see tenders come out and say 'the lowest bid will be thrown out'. And as a contractor it makes you think, OK, I can't be too stupid. I've got to be second.

SHARP: But it's an incredibly wise approach, because everybody knows...and we're all in the same business and that is its fee-for-service, so if you want the job in the first place you've got to be the lowest bidder to get it... And then how do you make your profit, well you change orders.

FRANC: And that's the difference between a good P3 model and a bad P3 model. I was consulting to a client, and I used my own experience, I told them if you're going to use the P3 model to nickel and dime somebody then you're using the wrong model. P3 is all about shared risk, shared reward.

And if you put out a P3 tender and structure it like a standard tender than again, this is a buyer beware and a seller beware situation. I've seen some other P3s that are very well written, and it encourages everybody at the table to do things right, let's remember what our core business is. If it's healthcare, well then it's about delivering clinical services, so let's deliver it to the right people timely and accurately, and as efficiently as possible, and if you do it right, you're all going to share in the reward.

And if we do it wrong, we're all going to share in the penalty. We're all going to have skin in the game, and those are the projects you want to be a part of. CNS