

Building-IT Convergence – What Next?

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It has been three years since I ventured out on this wild convergence ride. After more than a decade of developing and marketing software and hardware products, the step I took in 2002 was somewhere between foolish and brave, and though I've not had the time to analyze which, it's been a non-stop ride!

In this four-part article on the future of Building-IT Convergence, I will cover the driving forces, trends and predictions on how our lives will change as convergence takes root globally. In part 1, we will look at the true impact of the Internet, and in part 2 we will look at the change Convergence will bring to the stakeholders of our industry. Part 3 will explore what needs to change in the route to market of building system solutions, and part 4 will tie it all together with some suggested actions for those interested in playing a role in the future of buildings.

Part 1 – Convergence takes root

Much has happened in three years: open systems is now an accepted norm (though people still debate the flavor); the number of controls vendors have almost halved through mergers and acquisitions; system vendors are either marketing or busily developing XML- and Web Services-based solutions; integrators are now more aware of the benefits of a converged building; wireless is now the big buzz; and we all realize that the building automation and controls industry is not the only industry interested in connectivity between devices/machines (M2M reaches all manner of industry segments).

The promise of M2M is nothing short of incredible. Harbor Research consistently talks of M2M as the trigger for the next phase of the Internet, one that will eclipse the size and magnitude of the existing Internet and change (yet again) how we live, work and play. This has a potentially enormous impact on commerce and on the buildings where we spend a significant amount of our time. Making things (products) is no longer going to be the challenge and neither is technology; we learned at BuilConn 2004 the entry barrier for product development gets lower every year, while the manufacturing cost (thus selling prices) of widgets gets lower as manufacturing power houses like China continue to produce better quality things we need at lower cost. Wait until China starts to mass manufacture commodity controls products, now enabled by open systems!

The general world and regional economies are showing signals of strengthening, oil prices are on the rise—bad for summer vacations, but good for energy management business. While we never totally get used to being on some level of terror alert, even this has become a part of our lives today. My financial contacts tell me over and over that Wall Street (as well as your neighborhood streets) is awash with money looking for good homes.

One thing that BuilConn has helped in the past three years is the definition and building of a more cohesive intelligent building industry; I am humbled in our contribution in this area. The fact that Frost & Sullivan awarded yours truly with a CEO of the Year Award in 2005 is a clear and strong testament that this space is growing, it is important, and it is starting to have some common voice and proposition.

Most important of all these changes is that building owners are starting to voice their desire for all this stuff we have been talking about for years. "Yippee!" I hear you cry, quite rightly too – about darn time – so we should all be busy, rushed off our feet implementing smart intelligent buildings, right? But I see hesitancy in the market...what's going on?

Everything seems to be on hold – I hate being on hold, even when listening to music!

Not being one to accept unacceptable situations, I have to ask why, or more importantly, how can we as an industry break this hold cycle? The technology is here, the will to deliver is here, and the market wants what we have to offer, so let's try and figure out how to make the connection.

I propose a number of areas where we can get things moving.

The Internet

We saw in the nineties as the Internet took hold that the way that technology was adopted for the betterment of the end users (and thus suppliers) was not a continuation of business as usual. Experts agree there are generally two ways to look at Web sites and the Internet: either as a communication medium or as a business. Let me explain.

For most of us the phone and the Internet are essentially a communication medium. We use the phone to talk to people about our business, but our business is not the phone. Similarly we use email, the Internet browser as a medium to get access to information and exchange messages. If you have a Web site, it typically contains information about your company so that prospective customers can understand what you do. Again, neither your Web site nor the Internet is your business per-se.

At the beginning of the Internet, many organizations used the Internet initially as a communication medium. Airlines, banks, book stores and other types of businesses placed information about themselves on their Web sites--a great start! Then these companies started to really use the Internet, the term eCommerce was born, and now these companies' business is the Internet. I had to open a bank account recently and the bank clerk had no paper forms to fill out, doing all on the bank's Web site, and finally printing ready-to-sign PDF forms for me. Airlines (especially the low-cost carriers) rely on the Internet to conduct their business. While in these two examples the core business (money and airline seats) is not the Internet, they have integrated the Internet and the Web into their business so thoroughly that it would be impossible for them to operate without it.

Now, I'm sure you're reading this saying, "How can we use eCommerce in our business? We're not in that kind of business!" Also, you may be thinking that with the plethora of Web-based building control systems, you are already using the Internet; however, you are looking at the wrong perspectives!

If you look at what airlines and banks get out of the Internet, it is not efficiencies resulting from lowering the cost of opening an account or selling a seat. What they got out of the Internet is a much better and closer relationship with their customers. Their customers are able to get much better service and a much better array of information about their products than before the Internet. The relationship between the supplier and customer is now strangely much more intimate despite the lessening of human interaction.

So, in the buildings industry, we need to get past using the Web and the Internet simply as an add-on communication medium, however cool and fancy our Web site is and however good the Web-based interface your system vendor is providing to you. You need to turn the Internet into the core of your business and not some periphery supplement.

You need to find ways to leverage the Internet to become your connection to your customer's business, their buildings, their day-to-day problems, their objectives and their successes. This starts with a demand that you must make that all of the systems (I repeat ALL) you design must be compatible with native IP technologies and with gateways only when necessary to link to legacy systems and non-Internet standards. But this is only the beginning.

The key to getting the level of intimacy from the Internet is to provide services that your customers use as part of their daily lives. Provide a service that they cannot do without, one that ties them to you in a way that no proprietary protocol could have ever done. Your Internet-based service must become the center of your business and the center of your customer's interaction with their building (and thus, with you).

You must develop an Internet strategy that channels as much of the interaction between your customer and their buildings through some Internet-enabled mechanism, be it a Web portal, Email notification, wireless PDA based-tool or some other online mechanism. As you present your offering to a customer, you should look and design all aspects of the offering and your behavior so as to revolving around some Internet enabled "service".

Look at it from your customer's perspective; remember they have a busy life. They should be able to use the Internet to do everything they need to do, including the ordering process, the implementation process, and most certainly, in the operation phases as well as in their ongoing need for further services from you.

You must also look at it from your point of view. It is critical that you have access to all of your customer's systems, devices and information using the Internet, and I don't mean having access via some Web server on your customer's site either. The Internet must be a systemic component of how you understand and respond to your customer's issues. There is no excuse whatsoever for a need to visit the site to diagnose, re-program or re-configure anything in a well designed Internet-based system. The reason to go visit the site should be to replace known defective items or to spend time with your customer (the human-relationship element), to understand their issues, and hopefully find a way to provide an Internet-based solution.

One way to look at this is to decide which of your current activities you need to stop doing so as to provide better service for your customers. We have a fundamentally wired expectation to do more in our business, more people, bigger facilities, etc. Leveraging the Internet often involves doing less to achieve more. Banks now have fewer paper forms and process, which means fewer people also, while airlines have fewer agents on

the phone, fewer agents at airports and rely less and less on the traditional travel agent. If you are to re-organize your company, I propose you place the Internet at the center of your business and build around it.

Another thing you need to consider is that the Internet and the Web are not the same thing. The Internet is simply a network of devices, computers, servers and a bunch of infrastructure component; all of them speaking the same network protocol IP (TCP/IP mainly). The Web (which is not really a good name) is the name most commonly given to the "Web Browser", this is a piece of software that runs on a device intended to take instructions and display information from and to human beings. Just because you are using the Web, you are not using the full potential of the Internet.

Words that you should be embedding into your operation and offering are technologies such as XML and Web Services, mechanisms such as hosted service (ASP), Web portals, integrating tools such as commissioning, maintenance, alarm management, and of course, the different flavors of wireless.

It was not a long time ago that names such as eBay, Amazon.com, Priceline, Expedia, Google and other similar types of new Internet-enabled businesses were unknown to us. I wager that in five years time, new types of businesses will exist in the building systems space, and they will be doing things that provide building owners with such a compelling proposition it would not take much for them to buy in.

Part 2 - The Stakeholders

The route to market for building systems has predominantly remained the same for decades. Most people that truly understand what it takes to design an intelligent building know that the system is broken, or at least very inappropriate for the technologies and demands of today.

If we are to stand a chance of kick-starting the mass adoption of convergence, we have to be prepared to throw away the practices of our past similar to the way that successful businesses adopted new business practices with the advent of the Internet (as previously demonstrated).

The changes for industry stakeholders appear in three very significant areas: **supply side**, **route to market**, and most importantly, with **building owners**.

Supply side: Consolidation is the key word driving the supply side, especially with the larger and more established organizations. The major corporations have been on an acquisition binge with one goal: to establish a broad base of offerings applicable to all the different buildings-centric disciplines (HVAC, security, electrical, life-safety and IT) with a distribution channel offering a consolidated integrated solution to the market.

In the future, there will not be a major *controls* company, or a major *security* company, or a major *fire* company since these disciplines will be combined into a major building systems company that will provide everything a building needs. The smart ones will reorganize themselves to sell at a very high level, selling a financial proposition to the enterprise that has an interest in the building, and not selling technology, products or specific solutions to the building owner. At the end of the day there will be three or four tier-one majors that can do it all and a bunch of tier-two also-rans, who incidentally are still likely to be billion-dollar global companies!

Smaller and more nimble companies will undoubtedly continue to prosper in all the building systems disciplines; it's just the way commerce and the free market works. But their behavior will change; they will have to be very good at some specific thing (product, service or skill set) or focus on a niche (geographic or by market segment).

For many of us, the most interesting group of suppliers will be the innovative technology and start-up companies. This is where the action is for the future of Internet-centric building systems. Just think of the start-ups that are now giants in the general Internet such as eBay and Google--both started life as a garage shop operation and now command equal or arguably more attention than the IT majors like IBM.

Today as I write this, there are groups of entrepreneurs in garage shops somewhere in the world dreaming up new ways to look at buildings. My expectation is that some of these will be well known industry names in three to five years and may well be more important than the existing and mature billion-dollar companies that are slow to adopt—only time will tell!

The big question is where to find these innovative companies. I have to say that it is one of our missions with BuilConn and the M2M Expo & Conference to provide a platform for innovation since there are no other venues where such companies can present themselves.

Route to market: It's really quite simple. Solutions (technology, products and services) flow one way and money flows the opposite direction. The key word here is *flow*. Where there is no flow, there is no progress, no business, no solution, no profit, and no better buildings—just a lot of frustrations. As an industry, we have to focus on getting the flow going, and then increase the flow into a rapid torrent the likes of the Colorado in spring time.

The challenge here is that everyone in the route to market has an agenda, normally a commercial agenda to be successful in their business—not unreasonable at all. I learned in high-school why rivers bend and curve; this is strange behavior for rivers as water wants to take the shortest route to its destination (the sea), and curves provide anything but the shortest route. I learned that these rivers typically started off straight until something got in the way of the flow, typically on one side of the river (a tree falls, a mud-slide or some man/animal-made blockage).

The mission of the river is to meet with the sea, and it will find a way around the blockage in this pursuit no matter what. So the river focuses its efforts on the other side and with years of flow will start to create a curve in its path. As the blockage gets rooted, it also grows, and as it grows, the river focuses even more on the other side. Before long, we have a curve in the river.

The point of this is that the flow of the route to market is fundamental and the market will navigate away from any agendas that do not support the flow. Players in the route to market need to understand the purpose of

the flow, the commitment and inevitability of the flow, and ensure that their agendas are in sync with the flow and not blocking the flow. Any agendas not in line with the flow will eventually be bypassed.

I see a big dam in the building systems route to market and a bunch of blockages.

So, what are we to do in the route to market?

The first thing to do—a most fundamental action—is to accept that things are going to be different. If you cannot accept this it will be difficult to participate in tomorrow's smart building; you will be a blockage to the flow and it will go around you however big you are. It may take a while for the market to circumnavigate a deeply rooted enterprise, but it will. Acceptance is a wonderfully liberating thing because once you realize that sticking to the status quo is as dangerous as assuming something different, you can channel your efforts toward increasing the market.

Think of this as creating a new tributary to the river, to increase the flow and not get in its way. I see a number of channel companies (contractors, integrators and consultants) that have done this, have accepted that they need to do things differently, and in all cases, they are very busy with a very profitable flow of business.

Once you accept change, it becomes critical to educate. I'm talking about educating yourself, your team, your suppliers, and of course your customers. This is probably the most difficult task in this process. As in most cases education is unlikely to be a natural thing you want to do. You would typically want to sell, engineer, specify, project manage, or do any of the other myriad activities that a contractor, integrator or consultant does on a daily basis. Unless you can train those around you that the old, deep-rooted behavior is not the way to go, your acceptance has little impact on the market and your business.

The successful companies I know of that have accepted this change and who are very successful in business spend a significant amount of time educating. They immerse themselves and their organization in a new view of buildings, they develop new ways to sell, they use new products and technologies, and they allocate a significant amount of time and budget to actively participate in industry events and organizations promoting intelligent buildings. This is an investment that these successful organizations justify easily; they see the results in their growth and profitability.

Once you have accepted change and made a commitment to a new way of doing things, you have to do your number one job: provide some form of value or solution to your customers. But, beware. If you have come this far you have made an enormous commitment to a new world, and you have to understand that the way you provide your solution now is also very different. Not only are the technologies, products and tools different, but your customers should also be different (If they are not, you are doing something wrong.). So what is the fundamental difference here? How does one provide a value in the new world?

The answer to this lies in with the building owner.

Building owners: First, the term *building owner* is a misnomer. Although the building owner may be a single legal entity, the building owner that the buildings industry works with is rarely a single entity. There are in fact numerous individuals that exist in that group we commonly call the owner. In the new world of intelligent buildings, the number of individuals you will need to deal with increases dramatically.

As a vendor of a single system (HVAC, lighting, or even a smaller component such as a nonintegrated product) you would typically be talking with one or two individuals who have a need for that particular service or product. This could be an energy manager, a security manager or a facility person. In the old world, the needs of the owner are broken up into smaller needs that are typically satisfied separately, with purchase responsibility handed down accordingly.

If you, for example, are selling sensors, you would be dealing with the engineer who has the responsibility of purchasing sensors. The engineer would have a specification for the sensors required, a budget, and some other parameters on how they will eventually select a sensor supplier. This business is extremely cost conscious which is understandable since the budget is probably a significant buying motivation for that engineer. To make the sale, you have to convince the engineer your sensor is better (performance, quality, etc.) and at a cost that is acceptable (better than alternatives source for it). Service and relationship may also come into the equation.

Of course the above example is simplistic, and in most cases we are talking about projects that could in fact go into millions of dollars, but the fundamental goals of nonintegrated building purchases are similar: a) they are based on achieving some specific technical and functional need, and b) the cost price is acceptable. This purchase is typically seen as a grudge purchase, and this is a cost that needs to be reduced at all costs (pun intended). Competition can be fierce since several vendors can provide the same solution and companies often find it easy to justify reducing margins to get or retain that valuable customer.

The building as an asset

Many astute organizations that own or use buildings (pretty much all organizations) are now beginning to understand that their buildings and facilities are critical elements to their business. Many organizations are now being squeezed by their shareholders to perform better; the buzzword of this decade (and possible century) is *efficiency*. We see this in enterprise-based systems that manage personnel, supply chain and customer relationship management. These systems basically take masses of data and organize it into usable information for managers, directors, VP, presidents and the CXO staff to make business decisions that will allow all of their resources to achieve more with less.

Buildings are the second most significant expense in most organizations' overheads, second only to the cost of people. It is not going to take long for most organizations to realize that they can look at their buildings as an asset that can actually contribute to the success of their organization. To do this they need data and information systems that will measure their building's contribution against their objectives and put into place building control systems that will contribute to these objectives. This is the fundamental value of intelligent buildings—one that contributes to the owner's or occupants' objectives, whatever they may be.

You will notice two things here. Firstly, such a view of buildings requires IT-based systems, systems that these organizations already have in place for their other *efficiency drives* (ERP, CRM, Supply Chain, etc.). Secondly, you will notice that in this view the concern is not the cost, sensor performance, some component of the building, or even the specific system in the building such as HVAC, security or lighting.

The problem statement is simply how the building can contribute to the organizational objectives.

I was taught a long time ago about the difference between *cost* and *asset*. Your home electricity bill is a cost. You will do all you can to reduce this cost. You may change electricity suppliers to do this, or you may install a new water heater to reduce this cost, but the only way to go is down as far as cost and the amount of cost reduction—although initially could be significant—very quickly gets smaller and smaller. Imagine if your bills are \$1,000 a year; once you reduce this by a huge (and improbable) 50%, it is unlikely that you can achieve this level of reduction again, and even if you can save 100% of the cost, the value of this savings is finite.

Your home on the other hand is an asset that you want to grow. While you would want your mortgage payments to be as low as possible, you would invest money into your home to improve it. You would remodel it, put on a new roof, install a pool, or build an extension because such investment in your home would be worth more to you as an occupier or to someone else should you wish to dispose of it. Here the increase in value is not finite. You can (theoretically) invest \$x every year to increase your home size by some relevant size to increase your home's value by \$2x, and you can do this until you run out of land, and then you could invest in buying extra land. The point is that increasing the value of assets is not finite.

To many building owners, the costs of their buildings and facilities have in the past been essentially a cost to be reduced by whatever means possible. The buying behavior of the past is clearly an indication of this. As more and more organizations that own or occupy buildings are starting to realize, their facilities are a becoming potential goldmine to increase efficiencies, and in turn to improve their bottom line. Realizing that IT can be the vehicle that achieves this liberation of value, owners are starting to look at their facilities as asset, and with all assets, and there is a desire to increase them even if it means spending money.

Selling the new Solution

It is becoming clearer that the most significant value proposition of integrated and intelligent buildings is not in the technology, not in the increased flexibility of suppliers, not even in the reduction in staffing to manage disparate systems. These are all enablers for the real value to come.

The most significant value is in how organizations that own and occupy buildings can now view buildings: as a holistic entity that becomes an integral component of their enterprise system; as an asset they can monitor and control in real time; and by business terms, ways to measure whether the facility is contributing or detracting from their business objectives – and take action accordingly.

The successful and very valuable service you can provide building owners is in realizing this potential in their facilities.

Part 3 – Organizing the Industry to Provide Valuable Solutions

By this point it is important that we agree upon some key assumptions before we talk about what needs to change. The most important assumption is that if you have read this far, you have accepted the fact that the buildings industry is changing and that you will need to change in order to participate in tomorrow's world of building-IT convergence.

We can safely assume that we understand new technology is all around us, but the impact of this must not be underestimated, especially in this case because we're not talking about an incremental change, but a whole revolution of new products, services, tools and practices. These new technologies require a completely different approach in many cases.

Another assumption we should accept is that new players, new products and new services will come into the future of buildings. Your future competition will thus not likely to be your old foes; they will not compete with you based on any constraints in which you have operated before – Beware!

I would like to talk about change from a number of angles.

Perspective

Lyrics from a Paul Simon song reverberate in my mind when talking about perspectives: "One man's ceiling is another man's floor".

There are many areas where this is relevant in this discussion:

- One man's problem is another man's opportunity
- One man's new technology is another man's old technology
- One man's core business is another man's peripheral [uninteresting] business

One of the most significant challenges I see is bridging the gap, the gap between the buildings systems industry and the new building owner, specifically including IT/enterprise-minded folks. The significance of this gap cannot be underestimated, not if building owners are going to benefit from what many understand can be implemented today.

So, some could wonder who's job is it to make all of this work? Is it the building systems industry or the other side—the IT industry or enterprise or owners? When I talk with many in the building systems industry, there seems to be an expectation that building controls and automation is something that IT-centric owners need to care about, and it is in their best interest to understand the challenges, technologies and benefits of all these wonderful advances we are making to operate smarter and safer buildings.

While the early adopter owners would make the real effort to understand what lies behind all of these changes and advancements, we need to accept that early adopters are a unique breed of people and that they are in the minority. Not only are early adopters different from the mass market, they are the exact opposite in terms of their behavior, expectations, risk averseness and general buying process. This is one of the classic challenges in marketing new technology; vendors get good traction with early adopters and simply ramp up their business expecting there to be 100 times the opportunity based on the same behavior shown by the early adopters.

While there may be 100 times (or more) the opportunity with the mass market, we must adjust how we go about getting business from the mass market, and be sensitive to the way they make their buying decisions. This is where perspective comes in—we have to turn things upside-down in order to speak to this new, more pragmatic customer.

The principles of doing this are easy: don't talk about what you have to offer, instead talk to the customers about their problems. When you understand their problems, you can adjust your offering to solve them. Then communicate your offering as a way to solve their problems-- NOT because of any other reason, however cool or fancy your technology offering may be.

Rick LeBlanc from Siemens, at his keynote at BuilConn in Dallas this March, made a point to support this. He imagined a board meeting of a school district and asked what the likelihood is that they would have a debate on LON, BACnet or XML on their agenda? The answer is not very likely; the board members care about educating their students, budgets, teacher performance, competing with their neighborhood district and so on. They may have an agenda item on facilities, maybe their running costs, security concerns, energy savings and maybe sustainability initiatives, but they are unlikely to care about how these are executed. And as a tax payer I have to say that this is right; I want my dollars to work toward better educating my children.

In the next chapter, I will detail specific actions that you can take to change your perspective. In the meantime, as you go about your business try to do one thing--listen and observe different perspectives seen in circumstances around you when you visit your customers, your partners and also your vendors. In all of these cases try to understand their problems, for if you can identify their problems, you are half way to changing your perspective.

Information Technology

Unless you've been on Mars the past few years, you know that Internet technology is now the only standard around as far as managing and distributing information. When I first heard the term "Information Technology" in the late 80s, I must admit I didn't get it. But now it is imperative to fully understand what IT is all about and why it is going to play a central role in your future.

In a way, much of technology is about management, distribution and information analysis. The carrier pigeons used in years past are essentially a technology to carry information from one locale to another. The Guttenberg press was a critical technology for the distribution of information, so are the semaphores used in the past and the earliest data process systems that have dominated most of the 20th century.

While you may think that building automation is about controlling comfort and security (among other things), the electronic systems that we now use are systems that manage information about comfort, security and other systems that we have in our buildings.

This is the change you need to consider with respect to technology. And in this change, you will quickly realize the value of this information has a potentially far greater benefit to owners at large compared to the value of the information in actually controlling comfort and security. Here we have to talk about that wonderful word used more and more in business: value.

So far to date, when you put a sensor in a building, you would consider the value as being the sensor's ability to control some piece of heating or cooling equipment. That may have a value of \$x per point (or per sq ft), because someone would have placed a value on the comfort of the occupants in the building.

When you now use that same sensor as one of many sensors contributing to an energy management system, all of a sudden the same point is worth more, let's say \$2x because to the building owner, that sensor can contribute to energy cost savings. The incremental value was gained purely by the information flowing out of the sensor – what I would call the Information Value.

Now imagine if that same piece of information can be supplied to an enterprise system, one that can correlate the temperature in the facility to the performance, efficiency or risk mitigation aspect of the business. These (performance, efficiency and risk) are very valuable commodities to organizations in the 21st century, and if that sensor can contribute some critical value, the worth of that lowly sensor can now be argued to be \$4x.

Now here is the crux of all of this: When you sold the sensor as a building automation component you may have had to value engineer that sensor because you were selling to the person who valued it as \$x, maybe at 20% margin. Would you not rather be selling the true value of that sensor (at the same cost to you) at \$4x, which by my calculation increases your margin to 400%?

All of this came about by a change in how you look at the value of information, something that Information Technology allows you to do.

Hands up those who want to increase their margin from 20% to 400%.

What you sell

Stop reading for a moment and look around your office or business. What is it that you sell?

For most building controls, security, automation and integration readers, the answer should be two things: first, some combination of electro-mechanical products and second, some array of smarts, networks and an interface to people running their facilities.

Let me tell you something about the IT world. IT systems available today can store, manage, analyze, report and make sense of an amazing amount of information to achieve a variety of business benefits. Just consider the huge data warehouses that marketing firms have, databases that Wal-Mart has, not to mention huge government databases that store more personal information about us than I would care to discuss. These systems work on a premise that the more data they have—assuming it is stored and well structured—the more valuable that information becomes. So much of the information stored to date is information about people, 250 million if you just take the USA.

These systems devour data, they seek out data and turn data into usable and actionable information to improve business and reduce risk.

Now look around your office again, and I propose that every single sensor, actuator or device you install in your customer's facilities represent a piece of information that could be beneficial to the building owner (the financial / business guys, not your engineer).

And guess what? If you install the source of all that information and you have control of that information, you are delivering that new Information Value.

And the number of information points in buildings is growing. As an example, the new Terminal 5 facility at London's Heathrow airport is reportedly to have 1.3 million points of information in its building automation system. Yes 1.3 million in one building!

As a side note, the reason why proprietary systems are bad is that it is very difficult to gain the benefit of information if you cannot easily gain access to it. Open systems, especially IP-centric technologies such as XML and Web Services, instantly enable the extended value of all information in buildings.

So, what you are actually selling in the new age of Building-IT convergence is information about your customers' buildings. Information about how it is operating, how it is running, how the occupants are being productive, how risk factors are potentially affecting their business and so on. You shouldn't worry about how that information is to be used; your role to play is to liberate all of that valuable information in addition to providing the previously defined values of comfort and security.

If the data warehouse and analyst people are having a field day extracting information value from 250 million human "points" in the U.S., imagine how much fun (and thus value) they will have with the hundreds of millions, or perhaps even billions more points that exist in buildings.

To quote Benjamin Disraeli, the famous 19th century British politician, "As a general rule the most successful man in life is the man who has the best information".

I have news for you: You are in the information business.

PART 4 – Steps to success in Building-IT Convergence

There are eight specific action tasks that should be considered by all stakeholders in building systems, from contractors to integrators to consultants. You should view these as either personal or corporate tasks depending upon your situation.

1) Decide Your Role

Your number one job at this time is to decide what role you intend to play in convergence. Regardless if you are running your own business or you work for someone, you have to take stock, and based on your personal expectations, risk averseness, skill as well as financial and general circumstances, you have to decide on one of two broad directions:

Become a **Domain Expert**. If you choose this path, you will focus your energies and business on the discipline of your choice, be it HVAC, security, lighting or even more narrow areas within those areas. There is nothing in convergence that says that any of these skills will go away; in fact, the quality of these skills and disciplines will need to be higher because these fundamental building systems will become more visible as convergence exposes their true performance and effectiveness.

Become **Solutions-Oriented**. If you choose this path, you will focus on the total solution for the benefit of the building owner. But beware; the extent of the solution will need to be greater than what you would have previously been providing. The solution that owners need will be solutions to their business problems, in other words how their facilities can directly impact their business—so temperature control is not a big enough solution, neither is lighting or security systems. To do this, you must (as a business person) be able to put yourself in the shoes of the highest level person in the owner's organization and empathize with their problems – then provide solutions.

Beware of one critical thing: When you make the above decision, you will have to make sacrifices on the role you are choosing not to take. Both roads can lead you to successful business, IF you be the best in it.

2) Invest in Education

What is the education budget of your organization?

If you don't have an answer to this question as a percentage of revenue and you run the company, you are in trouble. If you work for someone else, ask them; if they don't have a good answer, you are both in trouble. It is critical that you expend at least 2% and up to 5% if you have decided to be Solutions-Oriented.

This is not just in dollar terms; you have to allocate time to educate yourself and your team on the critical issues that are changing your business. This is not an option, it's not a luxury and it cannot be relegated to be done when time is available.

If you are the owner or manager of your business, then in addition to allocating the budget and time, you must also encourage and motivate your team to educate themselves. Give recognition to those who are taking this seriously. Education topics should be appropriate and relevant to the changing landscape of convergence and be sensitive to the role that you have decided upon in Action 1.

Finding good sources for education can be a challenge, but thankfully there are many avenues from associations, formal continuing education, commercially-organized events such as BuilConn, and of course there is plenty of reading material from Web sites, trade magazines and shelves of IT-oriented books if that is your chosen subject.

One last source for education is self education. The North American culture is made great because of an inherent willingness to try, making mistakes, learning from them and moving on. As long as you limit the risk of mistakes and don't repeat them, I have found this to be the best method of learning.

So, the specifics of this action is an allocation of budget, time as well as a time table and list of specific subjects on which you need to focus. You may need to discuss this with your management.

3) Partner Up

The president of one of the largest building systems company in the world made a valuable comment at this year's BuilConn: Even at their multi-billion dollar size, they cannot do everything themselves, and they have a proactive initiative to partner with other players.

So, what right do you have to think for a micro-second that you can do it yourself? The new world of building systems and IT convergence will require expertise in many areas of discipline and you have the utmost responsibility to yourself to place yourself within a network of complementary skills to get the job done.

Most important in this is a clear understanding of your strengths and weaknesses. Create a SWOT analysis to list items of Strength, Weakness, Opportunities and Threats. This will help you strategize the most appropriate types of partners with which to work.

Be aware of the term *coopetition*, a practice becoming increasingly common with partner relationships. Basically, you may need to cooperate with companies that may be considered competition in other areas. While this may go against your instincts, it can bring you and the partner benefit. As long as you both understand the parameters of your partnership, it should be able to work.

4) Get Access to IT Skills

This action is very important if you decide upon the Solution-Oriented direction, but is also important if you choose to be a Domain Expert.

As a solution provider, IT is your basic material and skill base without which you will not be able to deliver the necessary value to the right kind of customer. IT skills have to be significant and available within your organization in significant quantities. In fact, your organization should feel more like an IT company than anything else if you are a solution provider.

As a domain expert, the need for IT skills is less. It's only necessary for you to understand the landscape in which you will be working. You will also be increasingly using IT-based tools even for your chosen area of discipline. In this scenario it is acceptable to have either low-key IT staff in-house or have a good relationship with outside IT consultants. Beware that knowing some cousin or geek son of a staff member will not cut it here. This has to be a serious business relationship. IT is that important.

Being IT savvy also requires you to be suitably equipped with IT tools. The cost of PCs these days is so cheap that you should not have anything other a reasonably equipped PC (Pentium IV or equivalent, at least 1 GHz, with 512MB of RAM and at least a good XGA monitor), there is also no reason not to run Windows XP or 2000 on all your computers. And there is no reason whatsoever not to have broadband Internet into all of your office facilities.

5) Step up the Ladder

One of the key ingredients for your success is climbing the ladder. Here, I'm talking about the ladder of decision makers within the building owner organizations that make up your customer base.

This is especially the case if you chose to be Solution-Oriented where the way to deliver the greatest value to the building owner is to talk to the CEO (or equivalent). Now, I do recognize that this is not always possible, but at least you now know who is on the top rung of the ladder.

Many building systems contractors or integrators have cozy relationships with some level of building manager, engineer or facility manager/operator. To be solutions-oriented you must aim higher, and I propose that you make it a specific action to identify the person or persons on the next ladder rung, and exert significant effort to influence that person by understanding their problems and knowing how to solve them. And give yourself a target time table to achieve this.

You may think this is politically dangerous since you will undermine a good relationship at a lower level. If that level is not letting you bring greater value to the owner, you have a simple choice to make: stay at the level you are with unsatisfactory results or risk everything for better results.

While it is not the intent of this article to guide you around internal corporate politics, it's safe to say that many successful sales people find ways to leverage their contacts to go higher up the ladder while providing benefit to original contacts such that they continue to be your supporter.

6) Increase Your Price

Yes, you read it right. Increase your price.

The problems I often hear about from contractors and integrators are that they are fighting to secure the low bid, that owners are trying to squeeze every penny from your margins, and that owners are playing them against their competitors to get the most competitive bids. And of course the large or desperate companies will "buy" the project with very low bids, with expectation of later rewards.

If you have taken the previous actions seriously, you will now be providing better focused services or products, be better educated in your strength areas, have a strong and complementary array of partners, have adequate IT skills, and be talking higher up the ladder. You have every credible reason to demand more for your services because you are simply worth more to the building owner.

By increasing your prices, you will be differentiating yourself from the low-cost mayhem that is preoccupying the building systems industry at this time. By doing so, you will be making a statement of your worth and capabilities.

Be aware that it will take some time for this strategy to work. You will have to sell your new capabilities ahead of time so the owner will expect you to understand and solve their problems—not just provide another control system. Also be aware that unless you do this right, you may lose a lot of business; it takes commitment. Don't say you have not been warned, and please don't complain to me if this strategy does not work for you.

7) Watch New Technologies

In order to deliver safe solutions to buildings, it is critical that you use proven technologies and use newer technologies only if there is a very good reason and you have an adequate backup plan.

As at the time of writing (mid 2005) the use of wireless technologies is maturing. Wireless is a broad term and while some of wireless is stable (GSM and WiFi for example), the most interesting development for building systems lies in wireless mesh networks, specifically for “edge” devices such as sensors and actuators. Initiatives such as ZigBee stand a good chance of stabilizing and becoming a standard and be used almost everywhere expect where absolute critical applications require wired solutions. Only time will tell.

Other critical technologies to keep an eye out for are PoE (Power over Ethernet), PLC (Power Line Carrier) and IPv6 (IP version 6).

Someday soon, PoE will fundamentally change building control systems, enabling devices to be powered through the Ethernet CAT5/CAT6 cable. This turns Ethernet cabling from a liability to an asset, and will be a game changer.

You should keep an eye on PLC (Power Line Carrier) technology. This, in a way, is the exact opposite of PoE as it carries data over what we normally think of as power cables. While this technology has been around for a long time (e.g. X10), it has yet to provide the reliability required for prime-time commercial-grade use, but work continues as this media is refined with new techniques to overcome fundamental hurdles.

IPv6 is unlikely to affect much of building system devices in the near term, but is likely to creep into play in unforeseen ways, as the number of public IP addresses becomes no longer limited. The scenario of every single sensor having a globally unique public IP address accessible from anywhere will dramatically change building systems at some time in the future.

The action here is to watch these and other emerging technologies, keep up to date with their developments, and try them out when appropriate. You will also benefit from conveying your knowledge of these issues to your customers.

8) Demand IP Products

The final action is to help the industry grow into what many feel is the right eventual path for the industry; the adoption of native IP products is ultimately the only way for the future of building controls.

While we all understand this will take time, many in the industry are resisting this trend and some have very good reasons, for now anyway. There are some types of products and devices that are too costly to be connected via Ethernet at this time and maybe even forever. The cabling cost and the management necessary for IP nodes can be a hurdle, and there are plenty of non-IP based devices that work just fine.

All of this is true, but if you are planning to increase the value you bring to building owners, you need to do this on the terms of the IT departments by using technologies that are well understood by enterprise integrators and players. IP-centric technologies, including Web-centric technologies and XML / Web Services, are the *only* language that is understandable by your new constituency of customers.

If you cannot have IP at all levels, it is imperative that all the information installed in any building with which you involved be visible at the IP level natively or through a combination of accessible gateways and protocol translators. Integration between building systems is best done at the IP level, and integration with the enterprise can *only* happen here.

In the meantime, continue to insist to your vendors that IP be used as low in your building systems architecture as possible.

Conclusions

The world of technology in buildings is changing; to do nothing is the same as making a conscious decision to go backwards, at a time where new IT-savvy players are moving forward at greater and greater speed.

While the perspective outlined in this paper may be overly generalized for many specific instances, it is hoped that you would glean what is clearly a very strong trend of convergence. Some commentators note that since

the building systems industry is actually moving toward the IT industry, this is not really convergence, more of a diversion. This view has great validity since the IT juggernaut is not likely to shift to the ways of the building systems industry. But Building-IT Convergence is the term we will continue to use because from a buildings perspective, the domain skills necessary for buildings to operate is not likely to shift either, not if buildings need to continue to be comfortable and safe.

The title of this paper is “What Next”; in reality what is next is up to the stakeholders of this industry—in other words, up to you. My closing comment is that you should focus on developing good valuable business for yourselves; this is not the end of building controls, it is the beginning of the new period of intelligent buildings, enabled by technology and you.

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