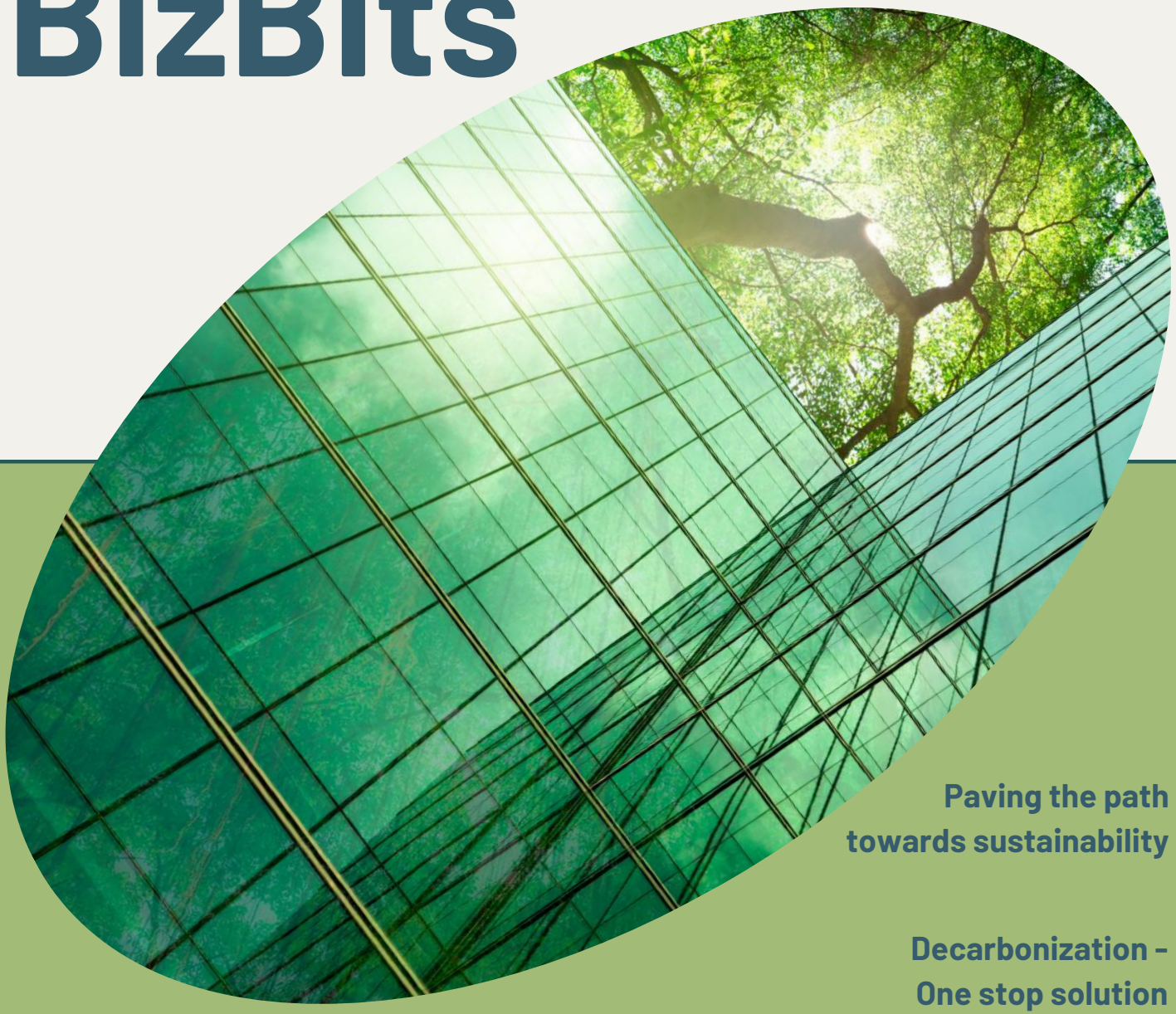
Building Technology BizBits



Paving the path towards sustainability

Decarbonization - One stop solution

Building Tech and Business Bites: May 2024

How Sustainability is Reshaping Business

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From the Editor

Your actions against the nature are impacting the world -
BE SMART,
BE SUSTAINABLE

When I think of Smart buildings, my equation always is, Smart = Open + Interoperable. In the complex world of smart buildings, "OPEN" so that products can be built by best of the minds around the world with the focus on their niche and expertise. "INTEROPERABLE" so that it helps the buildings to consistently perform at best of it's state!

In this edition we have industry leaders talking about Smart Buildings. Smart Buildings, which need to be not only consistently high performing but also keenly holding Sustainability as a virtue in the heart of "Smart".

I invite all our readers to:

Say Yes to "Connected Buildings by Connected People"

Say No to "Siloed, unprogressive implementations!"

Sakhee Chandrayan
President, INBAC Association

Seedhi Baat -Voice of India

By Sonam Wangchuk
Renowned Environmentalist

Presenting a transcript of his Seedhi Baat talk presented at BAC DAY 2023

Mr. Wangchuk started his charismatic talk by saying "Warm Greetings from a very cold place otherwise!

We have these days -7 deg Celsius outside in the morning and I am in a house which is +25 deg Celsius. Thanks to the bright sun in a solar heated house. I couldn't be there in person but few of my colleagues, Darshan & Starma are with you , so we are truly in hybrid mode while I address from Ladakh.

I am so so grateful that you are doing this conference so timely. I thank you on behalf of the melting glaciers of Ladakh because it is not just a luxury automation but it's a necessity to optimise resources in these times of climate crises. So, I will bring you straight from the mountains as this is called "Seedhi Baat" ., straight from the heart of glaciers, the status here and what we need to do and what we are doing here and what help we need. I will take you through a pictorial journey because it is about Ladakh, many different from different part of the world. So, my pictures may speak more than my one thousand words.

Are you ready?

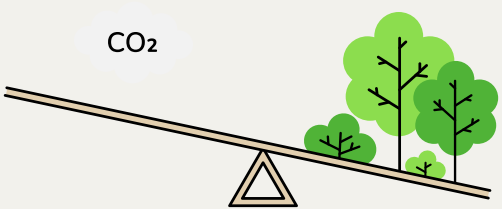
Ladakh, its in top north of the country. Its not in the Himalayas but its actually across the Himalayas and there is a world of difference between the two. Himalayas are lush and green like Kashmir, Shimla, Arunachal and so on. Only other side of Himalayas is totally different, more like other planet, maybe like mars or moon than planet earth."

"We are in the rain shadow of Himalayas, when we are trans Himalayas, it hardly rains here and therefore when I open my windows in the morning, it looks more like mars than earth.

. Temperature swings from +35 deg Celsius in summers to -35 deg Celsius in winters. This is one place they say you could have a sun burn and a frost bite at the same time if your head is in the sun and feet in shade in winters. This is how it is in this part of the world, where I come from but what I am proud of is my ancestors who decided to settle even in these harsh climate and made life possible. They didn't have much water from the sky like you all have, 4 inches annually is what we have but they went on into the mountains and beyond to find fossilized water from 100s and 1000s of years ago. These are called Glaciers. And as the glaciers melt and trickle in summer, they carve the mountains to bring that trickle to dry patches of sand there and the oasis you can see is drops like barley, wheat, peas and potatoes, fruits like apricots, apples, plum which is few in naming. This is what our ancestors give to this desolate land and I am very proud of it.

Despite all the harshness, people not only survive but they thrive the colourful civilization with its own language, literature, music , dance and a lifestyle in harmony with nature. This is what today Ladakh can share with the world also but there is big BUT and things are going little differently now. For no fault of ours, our glaciers are melting very fast causing droughts and flashfloods, alternatingly, every few years, there is either a drought or flashfloods. Let me bring you home the reality of what's happening here, so that climate change and climate solutions like digital automation and lifestyle change do not remain a coffee table discussion in drawing room but it is real, crises up in the mountains. Let me share 1 story and bring home this "Seedhi Baat".

In these mountains, there are so many glaciers here. There are some 50,000 glaciers in this Hindukush Himalayas and this what often called as 3rd Fold, the biggest fresh water reserve apart from the north and south pole, which supports life for 2 billion people, which is 1/4th of the earth's population."



"Now, these are melting away and melting very fast. You can see these big glaciers now a shadow of itself. When I was little, I used to admire this magnificent towering glacier, now it is melted and is melting very fast and the problem is they don't melt silently. In the heat of summer, global warming, they leave a torrent at the end of the glacier and these torrents when conditions come together, can cause flash flood. Flash flood that can be devastating. Let me show a picture of flash flood that happened in 2006. There was a big flash flood in the village where I am today. That time I had come to this village to help the victims of flood in Dhyang Village and while helping them. I was curious to know how frequent it is. So I got hold of an elderly person in his 80s and ask how often does it happen? When was the last time?

And the old man said " I don't remember, I have only heard stories but never seen one". The next one after this 2006 flood was 2010 when the quarter of the city Leh was washed away by huge flash flood and the next one was in 2013 and the next one was in 2017. This is the frequency of such events in Ladakh and as I told you these are punctuated only by crowds. So, life is becoming difficult and this rate will become climate refugees in few decades. And that why I wanted to bring home this message to you direct from Ladakh.

Now, What is causing this? Obviously, we are not doing so much in the mountains to deserve this. The big cities in the world are responsible and in the big cities, the building sector are hugely responsible. "

Glimpse from the Ladakh, Leh flashflood

"According to this, US Green Building Council survey, Building sector is responsible for 39% emissions, you know 28% in operations which is what perhaps we are talking about, automating and optimizing and then 11% in constructions. You often blame transportation and other industries but actually housing which every individual has a need is collectively bigger impact on these reasons for our glaciers to melt away.

Now, up in Ladakh, although we don't cause much, we are not sitting hand in hand, we want to do everything we can do to mitigate and to adapt to these challenges. So, some three decades ago, we started a school that was an alternative school. It was to bring reforms to the education system where there were failures alone to help those who have failed.

We started a school, an innovative school that would take failures and then engage them in innovating to solve the problem of the region. So, we started this school that was as much an education for grown up to live in harmony with nature.

The school was built with soil/ mud, natural materials right under your feet, abundant, nobody is so poor that they can't afford soil under their feet, heated and powered by sun right above our head. Totally free of cost and abundant. So with these materials, we build the school campus. It was off grid, solar powered, carbon neutral, back in the 90's when these terms not even coined. Very simple principles, straight out of the text books of 9th and 10th grade, evolved around these innovations."

"For e.g., the earth buildings heated by sun, we were put to use the chapter on Heat, conduction, convection and radiation. Rather than memorizing them, put it to use in buildings where the green house takes the suns heat and hot air rises and enters the upper floor, gives heat to the wall, cools down becomes dense and is pushed down to the green house and the cycle continues all day without any moving parts, no parts, no pollution , no power bill. This is convection , at your service, so likewise, conduction, radiation, to keep our buildings warm and ofcourse that will teach the students. This resulted in buildings at our school, which when it is -20 deg. Celsius outside in January, the rooms inside would be +18 deg. Celsius , as warm as anywhere else, now a days even warmer. And the little bit use of high school geography, and you can orient the building in such a way that they are also coolest in summer without using artificial coolers as they are warm in winters.

Here everything runs on solar energy from cooking to vegetables in green house, natural lightening, electricity, water heating, water pumping, even cows here live in solar heated cow shed. So, using natural resources in environment friendly way but meanwhile in the big cities, the picture is little different. In Leh city itself, of course Delhi and other places are becoming unlivable but in Leh city, this is the picture I took in the early morning in one December, you can see all smoke. People have money but no good climate friendly technology. So, just burn more to heat the house and how polluted the air becomes. Whereas, at this school, we have been trying to live not just sustainable but regeneratively. Sustainable by now is not just enough, because sustaining a broken system with a decading lifestyle will keep things broken and this time we should talk about healing, regenerative. . So, the building behind is worldclass, in that it maintain +20-+22 deg. Celsius, like any building in New York and London."

"The difference is that, the buildings in New York and London crash the planet for that warmth and comfort. Here it is sun alone and no harmful effects. What that means is when you use sun for warming, then the wood from the trees and dung from the yaks which are normally use to burn and keep people warm, need not be burn. When we live the way we live, it is restorative, the dung and the branches go back to the forest and make nature smile, where we live comfortably without them. So, its actually a healing effect and that we need at this point of time.

And now we are upgrading from alternative school to an alternative university in these deserts in the mountains, where we are innovating and doing R & D , so that it reaches to the masses, the civilians, the government, the army.

These are life science models of mud. All these are made using different earth Technologies.

One is Ramped earth and others are different technologies which we use to build the building at HIAL. These buildings make it a livable experience. We have finally achieved 100000 Sq. ft. of passive solar heated buildings at HIAL Campus.

Environmental Benefits from these buildings are that 30 tonnes CO2 per 1000 sq. ft. of space, every year is mitigated. Our 100000 sq. ft. of PSH Buildings will mitigate CO2 emissions by 60000 tons and save fuel consumption by 13,500,000 Litres over 20 years. For this innovation, we have been awarded by National Energy Innovation Award by Ministry of Power in Dec 2021.And now making PSH Shelters for Indian Army at 11,500 to 15,000 ft. Altitude.

Currently our passive solar buildings need active users and Local people learn these quickly, But as these buildings are used by army personnel, we need automation to mitigate these challenge."

"But now since we cannot train soldiers and office workers who keep constantly changing, we need help in automation in opening and closing of vents & ventilators for day and night, summer and winter.

As our natural glaciers are melting fast, few years ago, my students tried to make our own glaciers, we can refreeze the melting water in winters and keep in field in summers when farmers need water the most. In winters , there is always a trickle in streams and it goes wastefully into the river and into the Indian Ocean. So, can we freeze that clean water and keep it till may and June.

Of Course people laughed it , how can you keep ice from January till may or June?? Normally ice melts by march. Do we applied some middle school geometry to keep the ice till summer. What melts the ice is mostly the sun, and sun needs surface area. Farmers don't care about surface area, they need volume.

And in geometry we learn that certain shapes have high volume for surface areas. So, we should freeze then in form of cone and then a giant cone will not melt in summer till farmers start needing water. Of course, a giant cone or a pyramid of ice will not need a lot of power to pump water 10 storey high and we neither have these resources nor we wanted to use. So, we again use natural resources, we use sun and earth, this gravity and simple physics. So, simple primary school physics say , water always maintain its level, when you put a pipe upstream and bring it downstream, luckily in mountains we always have an upstream and downstream, that a gift of nature, called gravity, so the pipe at the outlet below wants to, water wants to reach the same level as inlet, So, there is pressure in the pipe and this pressure , if you put a fountain will actually splash water into the sky without the pump."

"The pyramid is 6 storey tall pyramid contains 1 million litres of water. Just a pipe upstream, comes downstream where water is needed and without a pump, moving parts, power, pollution or power bill, you have a fountain working and water is spread into -20 deg Celsius air where water loses its heat, latent heat. And when it loses its latent heat, liquid becomes solid and takes the shape of a cone. The cone has a geometry that doesn't let it melt so easily in summer or spring season. So, we make these in huge sizes, containing 12 million litres of water and they melt, they melt when spring and summer comes. This is in June. when it's the end of spring and farmers are now not worried because natural streams will start coming. They have problem in early spring. You can collect them in tank and then irrigate.

Again, in this automation is needed. E.g. to operate fountains only when temperature goes subzero at night & close them when its +ve after sunrise. Or to activate safety valve when a fountain gets blocked, in order to save the entire line from freezing, as stagnant water freezes easily. So, safety valve that are automated, can save people from lot of trouble and make things very easy and scalable. Hence, automation can be a solution.

The Ice Stupa Project : This Indian innovation was chosen from 2322 contenders from 144 nationalities.

BUT!

These little ice stupas and solar buildings will not solve our problem. Actually the solution to our problem cannot be found in the mountains of Ladakh, its more in big Cities like Mumbai, Bangalore, Beijing, New York, London, etc. where people haver to live smartly with automation and live simply so that their lifestyles are not so complicated and that we started a movement , called, Please Live Simply, So We May Simply Live!"

Transcript by
Anukriti
BTB Editorial Team

Transcript on ProConnect Discussion - March Issue

Eminent Panelists & moderator:

- Mr. Sandeep Goel
- Mr. Samdarsh Nayyar
- Mr. Kunal Chaudhari
- Mr. Vijay Sanap

Topic of Discussion : Interoperability for Collaborative and Sustainable Built Environment

Interoperability is essential for unlocking the full potential of the built environment, enabling enhanced efficiency, sustainability, resilience, and user experience across buildings and urban infrastructure. By fostering seamless integration and communication between diverse systems and technologies, interoperability lays the foundation for smarter, more connected, and more sustainable built environments.

To reflect more on the many advantages of interoperability, we had a highly knowledgeable panel in our ProConnect March discussion forum. We were delighted to welcome our first panelist, Mr. Sandeep Goel.

He is Director at Proion Consultants. He has been engaged in 20 Years of working and serving BIS in over 12 Committee of Various IS Standards and NBC Sections including Sustainability, Plumbing, Information and Communication Enabled Installations and other Sections. He plays a major role in having the codes updated based on learnings from Global Codes & Standards and his Practise in MEP Services serving his clients with additional handholding from the Mentors in the Fraternity.

We were thrilled to welcome our dynamic panelist, Mr. Kunal Chaudhari. He is a '2nd Generation Consulting Engineer', and Director at renowned MEP Consulting Firm 'Udayan Chaudhari & Associates.'

A Mechanical & Automation Engineer by qualification, Kunal has successfully delivered several prestigious projects in India and Abroad. Sustainable designs coupled with pro-active use of state-of-the-art technology have been the cornerstone of his career as a Consulting Engineer. He has work extensively with MNCs and Renowned Global Brands over the last 15 years.

We were overwhelmed to welcome our expert panelist, Mr. Samdarsh Nayyar, director at SNC, a 30-year-old, multi-disciplinary BIM enabled MEP building services engineering design consultancy firm. He has been involved in landmark projects across India for leading developers! He is a FITWEL Ambassador, B.E.E. Certified Energy Auditor & Energy Manager, B.E.E. Certified ECBC Master Trainer and has many similar feathers in his cap.

The discussion was moderated by our very own INBACer, Mr. Vijay Sanap, Director at Techbean Systems. He is an experienced Instrumentation Engineer, having worked for over 30 years in the fields of Industrial Automation, Building Automation, HVAC and ELV Systems. He is also a celebrated educationist and a core INBACer with multiple critical roles.

First question was directed to Kunal. Why is it important to have interdependence of subsystems in any built environment? Kunal explained,"- the question regarding interdepend ability of various Building Systems is critical to meet what you target.

For example, a fire alarm system or FAPA system needs to talk back to the BMS. Today simply because you want the HVAC systems to react to one signal I give you a small example like if I need to trip my air hand units, I can put a control module on the fire alarm system and trip it off the panel but a start stop command is going back to my BMS already so if just by integrating my FAPA system with my BMS I just have to run one signal and through the BMS I can actually trip my ahu and my fire dampers rather than running a multitude of cables. "

"It makes it simpler for the operator also. I think in design my colleagues would also probably agree that we keep ideating and keep improving on designs and system integrators bring it to life but when we give a really complex system for the operator to operate I think that's when the confusion starts and that's how Ai and ML and all these IoT platforms are kicking in and trying to make the life easier for the end user or the customer.

So, it's very important to have all these systems talk to each other. He cited another example. He said, "In offices we generally have VI boxes in enclosed rooms like the one that I'm sitting in and there's an occupancy sensor generally for lighting right and it all talks back to the lighting management system. Now to control my air con do I need to put a separate sensor? the answer is no. But I've seen projects in the past maybe last four five years where I've seen two sensors in enclosed rooms also with different designers.

Now the point is if the LMS and the BMS I seamlessly talking to each other than I can actually use that occupancy or V sensor data back to control my HVA so if I'm not in my room I don't want my air con to run I can I can push it up to 26° .So all these systems uh whether it's parking management system whether it's lighting management Energy Management I think eventually everything needs to talk to everything and onto a centralized IBMS platform I think."

Vijay agreed to the point put forward by Kunal. He insisted Kunal to cite few real time examples. Kunal recollected - "In Hospitality projects we get a lot of data from the operator or the brand.

I shall give you an example of Marriot I, think they are extremely thorough with their BMS requirements. For example, they want everything metered and moreover they have a very clear definition in FLS for the kind of cause-and-effect Matrix that the FAPA system is supposed to follow. "

"Now when we talk about FLS, there are three distinct elements plugging into FLS from a MEP perspective. There's firefighting, which is sprinklers, hydrants, handheld extinguishers Etc. Then we have detection, which is fire alarm and detection system, public address system and then of course smoke control or pressurization and smoke evacuation systems.

Now how do I run a smoke evacuation fan which I need to test in a year probably twice in a hotel or any public building? I mean all these systems need to be operated some dry runs. You need to do some mock drills to be able to see if the system is performing after the handing over of the project, so we invariably have these fans talking to the BMS. In case of an emergency, they're supposed to run off the fire panel and the fire panel will only give you a signal if it's communicating seamlessly through the BMS back onto the starter panel of these fans and these interfaces are clearly earmarked especially in the hospitality projects which I have done for various Brands.

I find that IHG, Mariott, Radison, they do have these processes clearly defined for the designers and for the system integrators to follow and then it actually sort of filters down into the operator level. Also, I think hotels are a great example where a lot of this engineering happen. I think Hospitality really Takes the Cake when it comes to such interoperability of systems."

Vijay's next question was to Samdarsh asking his views on interoperability within subsystems of a building. Samdarsh explained, "when we talk about building management systems it is a synonym to interoperability, I mean, there is no meaning of having a BMS system or an IBMS system which is not interoperable, , it is as good as having independent systems.

When we design BMS it is not just restricted to the air conditioning plant which was a case once upon a time. We' taken the data from even the electrical systems like the generators, the Transformers the electrical panels the energy metering, the BTU meters, the water meter. When we talk about the plumbing systems, we also take in the complete data from the STP we have a separate PLC system for STPs. "

"Similarly for the fire pumps the plumbing pumps, and then the complete fire alarm public address as a system is also brought into the BMS security may not bebraises the client brief or theirown security standard. so definitely it is very important that all these systems are brought to a common platform, and they talk to each other, they communicate to each other.

A very good example which Kunal gave of a typical office scenario wherein there is a thermostat which does manage the VAV control, the air control into that room but then can that thermostat also count as an occupancy sensor and the lighting Etc can also be controlled with the same system so definitely in terms of interoperability the Building Systems will only work efficiently, will only deliver the due energy performance, will only contribute to occupant well-being when they are interoperable."

The discussion grew more interesting with the next question. Vijay asked Samdarsh, "What challenges or barriers do you foresee in the widespread adoption of open protocols for better interoperability, and how can these be addressed?" Samdarsh shared his experience. He said, "My understanding is that open protocols and interoperability can be mutually exclusive as well that means even if we do not have an open protocol say for example, available systems can still be made interoperable.

But definitely having an open protocol helps because when we have now so many options available in the market so even in terms of BMS for example we have the new age Wireless BMS systems coming in and from lot of unknown Brands Etc so when we have an open protocol then we can pick and choose any DDC of any brand or maybe the main Hardware, the main BMS controller of any other brand and the two can be brought to communication. I would cite an example; I was doing a high-end residential project and now in a typical residence we also have lighting Automation and computer automation system also takes care of the blinds and the curtains and the audio video system and all."

"Now there are certain brands which are totally proprietary in nature, what basically what happens with them is that then we have to restrict ourselves to only use products which are from that Brand only which makes life very tough because it may happen that their some products may be exceptional but then they have certain other products which are not of superior technical performance so there open protocol or the lack of it really makes life painful. Therefore, in automation there is another platform called as KNX now that is an open protocol so you would see that majority of the light automation firms like Panasonic and all they all work on the KNX platform. Why? because it is an open protocol it can combine itself with any third-party brand, any third-party air conditioning, VRV outdoor unit etc so definitely interoperability gets much convenient when we have an open protocol but that is definitely not a showstopper."

Vijay seconded the thoughts of Samdarsh and went on to ask his next question to Sandeep. "How can the interoperability make the built environment safe, secure, healthier, and efficient? " he asked.

Sandeep replied, " I'm so pleased to know the views of my fellow colleagues, young colleagues, with the clarity in their mind. I'm sure this will help us to meet our goals better. I'll become a little simpler in this case. As colleagues we would have so many acronyms which we will use commonly whether it is artificial intelligence I heard from Kunal or machine learning or Internet of things, we are really having those common acronyms to talk about, but I think beyond that there is so much exciting other things to align for. I'll just give you a little background of it. We work for organizations, associations we are into policy making, into many platforms where we try to work around, the major problem comes when people work in silos, and they do not talk to each other. The kind of problems we face in day-to-day lives when people work in silos, they don't communicate to each other and the same level of issues we do see in our building automation systems,

‘in our building planning which doesn't have a right kind of communication skill sets to transfer data. I heard data is of course money, people call data is oil so I think if the data is not going seamlessly, we are losing a lot which we could have achieved for. The best part of the story is that I'll just say from my initial days of my working I learned something which is known as sequence of operations, and I also learned something which is known as cause-and-effect Matrix.

This is very important that in the blueprint of our proposal we should be very clear about the fundamental objectives. Today the spectrum of services is so large it's not just MEPF, we are talking about ICT information, communication technology, we are talking about of course IBMS today. Cameras are not just cameras to keep eyes on people, there is also audio analytics, there is video analytics. We've been using back in our office something which is very simple which is known as geo-fencing. So, you don't even need a sensor for a person to be there in the room for the light to operate. Probably my cabin light, my office lights can work on the geo-fencing through my mobile. I enter my premise, I park my car, light of my office comes up. I leave the office the light switches off. So, the days are gone when you are dependent upon the human being present. It could be so customized that if the person is entering himself, he would have the command and control for the lighting arrangements in his office. Today the matter is not interoperability. When we talk about it, it’s not just about systems to give efficiencies but it's also about performances in its completeness. I'll just try to close this in terms of saying that we are not just talking about EPI in olden days. ”

LET’S CO-CREATE CONSISTENLTY HIGH PERFORMING BUILDINGS

"My young colleagues, I like to tell them we used to and maybe if you talk to your senior colleagues back at work, you will know that in hotels we used to have something which is known as HLP, heat, light and power. Those were the days when diesel used to fuel the power as well as the heating mechanisms were the part of the analysis of the performance of the building.
Today we are moving towards EPI, energy performance index, we are also talking and I'm glad that Samdarsh also touched about Plumbing I think with the various kind of diversified occupancies, I call them my favourite occupancies are three sleeping accommodations: hotels, hospitals, and homes. The kind of varied use you have on all these three occupancies although they come with the same alphabet as H but you could see how different they become they are all sleeping accommodations but the expectation of a healthcare where building automation plays a very crucial roles specifically in terms of resilience, hotel where it plays a lot of role in terms of energy saving and homes in terms of water and energy metering. I think we have got different types of diversified occupancies, and we need to integrate them very sincerely as designers.. I take the ownership of bringing the transparency before really going to the manufacturer and saying that they are not doing good I think as consultants it's our duty that we have the transparency and the clarity in what we want and then we will get all the Helping Hands from the society whether it is the OEMs or the system integrators to meet our objectives of interoperability."
The deep insights brought forward by Sandeep was quite resonating with the topic. Vijay then asked him, "Do you believe that the implementation of smart technologies in the built environment can also have positive social impacts, and if so, how? "
Sandeep said, "Smart Technologies are today going Leaps and Bounds. Every day there is new learnings which are happening. I was just talking about solar to Kunal the other day and I said who could say that solar is not smart if you could have some good elements of design within the solar systems to make sure that your solar utilization is optimized. "

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SALTO inspiredaccess

"All things don't cost too much it's just that how you put your things in the prospective of achieving your goals and I'm sure my colleagues will also agree things are getting not that very costly they're becoming affordable back at home."

He explained, "Affordability is the key. these things are becoming also scalable. Further ahead you're talking about vertical transportation today, you're talking about Mobility today you're talking about systems and Technologies to monitor themselves and do predictive analysis of Maintenance requirements. I don't know about addressable fire alarm system; I learned in 1995 in those days the director used to tell about its own health am I clean do I need a cleaning arrangement or not. Things are moving better so I think the whole idea is these systems are available. Smart Technologies could be as your smartness could bring them together, I think the smartness comes also for people like us to integrate that and bring them together and then only I think the overall spectrum of the smart buildings will emerge in its fullest form.

I think Innovation is the key. Ideas are there around, we have got a lot of exposure working with global clients all three of us we've been working with the some of the best names in the fraternity, we keep meeting and talking to them, and I think creating these kind of benchmarks helps us to bring more smart driven Technologies into our projects. I urge to have them in our lifestyle to bring the glory of sustainability, water conservation in our means and ways then only I think the country goes to the path of decarbonization.

I think we are committed all of us are committed to bring that ahead. During the earlier days if you talk about the automation, three things need to be addressed, one is Comfort, convenience for the buildings, second is Safety and Security and the third is energy saving. If you have Smart Systems obviously all these three will have impact on it and it must be positive otherwise you don't call that technology smart. It has taken a couple of years from micro-USB to USB lightning, now to down to type c. It has taken a lot of time to bring only the charger of the mobile phone into one common platform of USB type-c. "

"And you see the kind of hardware and the kind of environmental damage we would have created by having different silos within this domain of so much such a simple thing which is like a charger of a cell phone how diversified we have been and what kind of a damage it would have done to the society all of us carrying different cables in our luggage for our different appliances which we use and now one charger for the family and that does the job."

Vijay co-related with the idea and went on to ask his generic question to the panelists. "What are very important views of India's capital on built environment as Delhi is a super important hub of public and private sectors and state-of-the-art buildings."

Kunal promptly replied saying, "I think living in Metro cities, nobody is safe from all the traffic and the pollution and the noise.

Every now and then I'm hearing a lot of people talking about second homes, third homes where they can just get away from the city after their work and maybe just go away for the weekend and to decongest our streets to have better outdoor air quality to have a better life. We are all human beings and frankly the way we are living right now and the kind of stresses that we go through as people living in these huge metros is a bit frightening and if it can only get worse from here so it's about time that we use technology and we use all that is under our control to control the built environment. To make sure that there are a lot of parking spots in the built environment maybe a proper parking management system that allows you to park your car where it's supposed to be I think those simple things also help decongest roads. If half the car parks and on the roads, they go away and they are put into buildings like they're supposed to be I think quite a lot of the traffic problem can be solved. We talk about smart cities, and it has to start with our major metros, and I know that the government is doing a lot of work with smart cities around India,

but I mean if the national capital or the financial capital of India,
if these two aren't smart then what is? So, I think it's important for us to Target on these metros and it's good to have a second or third home even I aspire to have one but Delhi for me is my home and I want to stay in Delhi and comfortably so that's
where I see technology coming in and helping us out."
Vijay added, "I think there has to be the ownership also from the policy owners and policy makers because I remember one of my early days, in one of my trip to US and this ust be 10-5 years back. I saw one building being constructed, there was a huge area around that building, and I asked my colleague what was that land meant for? He replied saying that, that building was going to occupy 5000 cars. So, if policy makers bring that kind of policy in our country, then parking issue could be resolved to quite some extent."

Samdarsh explained his thoughts. He said, " I have quite strong say about this point. Our country is known to have most pollutant cities in the world. We are a nation of 1.4 billion people. There was another very good book I was reading about India and Indians and there was a foreign guy and when he left India went back, he said India is a beautiful country, but Indians have a very different negative attitude.
They have an attitude to blame
others for their problems so they will blame the government they will blame their neighbour they will blame other people, but it is time that we as an individual also start looking at ourselves. I think it just boils down to that. We are educated people literate people and simple waste segregation at our homes we don't do. Big landfills across Delhi NCR, you go to towards Chandigarh side there is a huge landfill when you leave that Gazipur area you go to Bandwari, Gual Pahari area there is a huge landfill. Similarly with the flight of our city which Kunal very beautifully explained that at the end of the day Delhi is the city where he wants to live where we want to live but it is no longer livable."

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"So it is not just about public policy it is not just about whether companies allow work from home or maybe a hybrid system them to bring down the number of cars on the roads or whether we make smart or super smart buildings it boils down to like us as an individual as well as to how we are doing our bit for the environment and I feel that with a lot of it goes down to our education system. We probably as people of this field we have learned the subject but what happens in our schools there can be moral values there can be spiritual values there can be general education but are we really focusing on how we as individuals can contribute to a more sustainable world for a more connected world for a more like environment friendly atmosphere.

My views are frankly this on the subject. So, there was a study in the in the US wherein they made 10 Net Zero homes and after one year the outcome was of the study was that there are no Net Zero homes, there are Net Zero people.

So basically, bottom line is that I very strongly feel that we as an individual must work upon and improve. I will give you a small example of how public policy also helps create awareness. So, what happens is in China or in Japan there are these guidelines that during summer months you will not wear blazers, it's a simple straightforward public policy straightforward so when you wear a blazer during the summertime you must put a set point of maybe a 23 or a 22 in office right. So similarly, they say during Winters wear a sweater we will turn heating only when it is very cold, but you wear a sweater and a jacket in office. So, I think from a public policy, from a building operation perspective I think these are some small aspects which can be implemented."

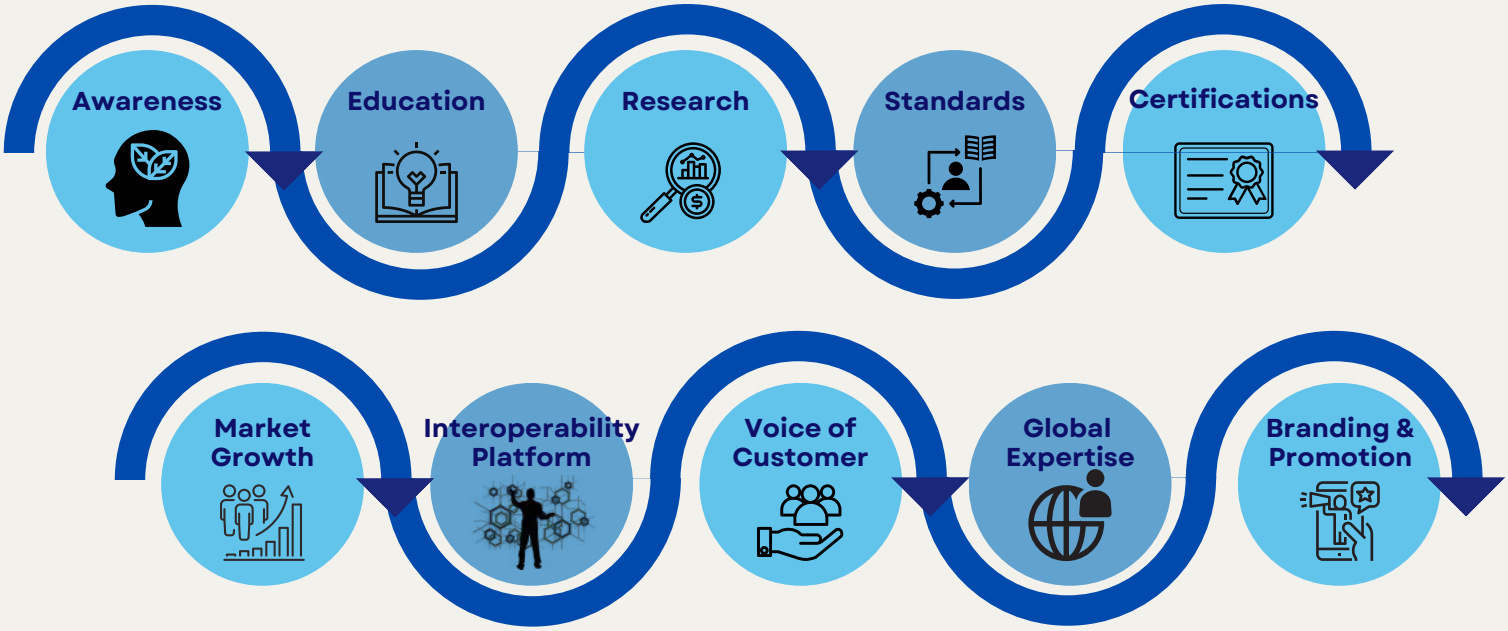
Sandeep shared his perspective. He said, "I feel personally speaking while Delhi is being looked upon obviously at the global level of what is happening the seat of power is sitting here the movers and shakers of the country are in Delhi and of course in Mumbai in Bangalore, Hyderabad, large IT block centres and what not."

"I think India has got all these Excellence areas where which catch the eyes of the world right from even cities in Ahmedabad in Gujarat you have got a World Cup match happening there, you are having some kind of exhibitions happening. so, I think every place in India is really coming into the eyes of the world and things do escalate to the level of interest of the people. I also agree with a lot with Samdarsh that there is a lot which must be done at the grassroot level. Since you talked about Delhi we have got buildings like Bharat Mandapam, we have got Parliament which is coming up, we have got all these large Mega buildings which are happening here and why only here because they have been done by the government.

Having said that there are private buildings there are all kind of, buildings I feel personally as a consultant, as a part of the society as a part of contributing in our ways and means where is the data .Data is not available in public domain I would like to really compare my building with some other building and I would like to see the real data which could be looked at to transform my building into a better building. That data is not available now. I'll be very candid again over here. We had this uh 9/11 US, all the proceedings of the investigations are available today on NIST, you can go and check NIST website of the federal government every data of the devastation of 9/11 are available. Today after more than 20 years that data was there in place, unfortunately, incidents happen in India, we do not have any public domain available authorized by the government to know what exactly happened, if there is an electrical accident, there is a fire accident that is not available, if there is Excellence, that data is not available. As a part of domain expertise, availability for people like us to see and visualize if that building is able to perform at that LPD why we can't do that. Now we go to our clients and the clients will give us some data about them some of it is also to be honest with you manipulated because they would also like to go back to their management saying that they're doing glorious performance in their back of the house and Engineering areas but where is the real data that data whether it is for Yashobhumi or for Bharat mandapam is not available for people like us to be inspiring we just see the building very nicely done but that data is missing."

"How many of us are putting an energy meter back at home, what does an energy meter cost today to check the air conditioning consumption of at your home, at your office we are not putting that that's simple automation. You just need to put a three-phase, or a single-phase meter take a reading and check if your air conditioning is not doing well, if the thermostat is not cutting off, the refrigerant is not going well, don't just experience it by the temperature of the air which is coming from the grill. Electrical patterns, the starting current, the power consumption tells you how inefficient the compressor is becoming. How many of us are having a water efficient fixture, you go to a braded shop, say, I want a tap for my was Basin, can you tell me what the flow rate of that tap is? that information I would again say one more thing you see it's important. That information is available in the commercial market for people to also know about it and to be then disseminated to be told how much water your household consumes. "

Value Proposition of INBAC Community



Join the community TODAY!

"If we have data, we can manage solar PVS we have a know back at home solar PV we reveal it back to grid but where are the things which are becoming such case studies available for
common man to be inspiring to do that so much off roof?
If I go back to Kunal, I'm just citing out or to Samdarsh and say guys why don't you do that I think they will be ones who will say okay the problem is information is not
available to inspire youngsters like them or even to a larger society and we do not have any information which we could secure to obtain and use in the interest of the better world. It's just that you have to do a lot of deep dive to get to that information and I think information training, Education, data is the key for a successful India."

Vijay agreed saying, "that's a real great Insight and I think we all will agree to that
what Sandeep said and I cannot agree more with your last thing that the youngsters
they must now take it forward."
Kunal, in the same line of thinking concluded the discussion saying, " I think we started talking about it and I firmly believe that for us MEP Consultants the line between technology and MEP has completely blurred. I think today as a mechanical electrical or even a civil engineer who works in our field, I think one has to be right on top of technology today and ensure that all these systems and subsystems talk to each other so that we can collect the data that s g was talking about not just for commercial buildings but even our homes."

Transcript by
Adrija RoyChoudhury
BTB Editorial Team

Improving Efficiency in Building Management Systems

Exclusive Article by Bangalore Chapter President - Sateesh S.

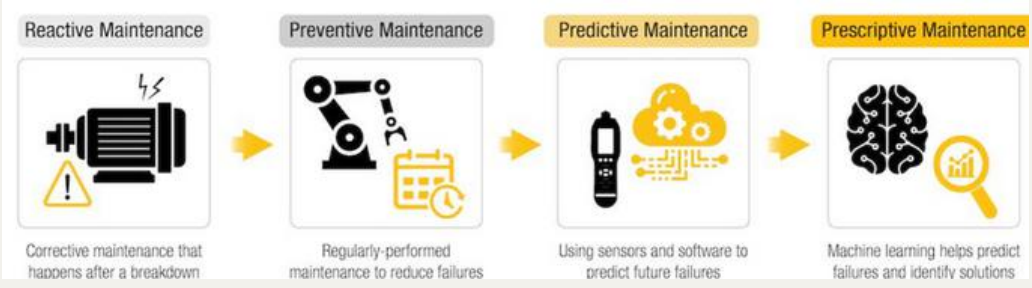
Context: A building management system (BMS), serves as the backbone for monitoring and controlling essential building functions, ranging from HVAC and lighting to security and energy consumption. In today's landscape, enhancing the efficiency of a BMS is not merely a matter of cost reduction but a strategic initiative aligned with sustainability goals as listed below.

1. **Integration of IoT Devices**

Integrating Internet of Things (IoT) devices into a BMS revolutionizes data collection and analysis. IoT sensors can monitor energy usage, occupancy levels, temperature, and air quality in real-time. This data empowers facility managers to optimize building operations by dynamically adjusting HVAC settings based on occupancy patterns and natural light levels, leading to substantial energy savings.

2. **Data Analytics and Predictive Maintenance**

Harnessing advanced analytics and machine learning within the BMS enables predictive maintenance. By analyzing data collected from various sensors and systems, predictive algorithms can identify potential equipment failures before they occur. This proactive approach minimizes downtime, extends the lifespan of critical building systems, and reduces maintenance costs. and enhances overall system reliability.



3. **Remote Monitoring and Control**
Implementing remote monitoring capabilities allows facility managers to oversee building operations from anywhere. This feature is particularly beneficial for multi-site facilities, enabling quick adjustments to settings for optimal efficiency. Remote access enhances responsiveness, reduces operational inefficiencies, and promotes effective resource allocation.

4. **Energy Management and Optimization**
Integrating energy management tools within the BMS facilitates real-time tracking of energy consumption patterns. Leveraging this data, facility managers can identify energy-saving opportunities such as scheduling HVAC systems to run during off-peak hours or adjusting lighting based on daylight availability. Also Setting the control limits in loading and unloading of chillers during peak hours by these optimization strategies lead to significant reductions in energy costs and environmental impact.

5. **Utilization of Cloud-Based Platforms**
Transitioning to cloud-based BMS platforms offers scalability and flexibility. Cloud computing facilitates easier data access, remote updates, and seamless integration with other building systems. This transition optimizes system performance and enhances operational efficiency.

6. **User-Friendly Interface and Smart Controls**
Developing intuitive interfaces and implementing smart controls empower building occupants and facility managers to interact effectively with the BMS. Mobile apps and voice-activated assistants enable users to adjust settings and receive real-time feedback on energy usage, fostering greater engagement and efficiency.

7. **Continuous Monitoring and Optimization**
Adopting a continuous improvement approach involves regular monitoring of BMS performance and data analysis to identify areas for optimization. This iterative process ensures that the BMS remains aligned with evolving building requirements and efficiency goals.

GOLD HID Physical Access

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iSECURE
securing identities

- Door Access Control & Attendance
- Multiple Card Technology & Format Reading at a time
- Access Control & CCTV Integration
- Contract Labour Management
- Pedestrian Barrier Access Control
- Employee Locker Access Control
- Identity Analytics
- Vehicle Access Control and Parking
- PPE based Access Control with Video Analytics
- Integration with Sub System [HRMS]
- Elevator Access Control

Enterprise Visitor Management Platform

iTRACE
securing identities

- Visitor Pre-booking by the Employee
- OTP via SMS for Visitor Confirmations
- QR Code based Pedestrian barrier Access
- Visit Confirmation SMS with link on QR Code/Location Map
- Visitor Parking Management with Payment Facility
- Visitor Pass Generation
- QR Code based Entry-Exit
- Fingerprint Integration for Enhanced Security
- Integration for Guest WIFI Login Credential through SMS
- Visitor Tracking within Premise using AI based FRS (CCTV Analytics)

Enterprise Cafeteria Management Platform

FUNCTIONALITIES

Multiple Cafeteria Vendor Creation

Employee Account Charging for Cashless Payment

Card Swipe at the Cafeteria for availing food(ePurse)

Administrator

Host Employee

Security

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securing identities

For More Information
SCAN ME

Access Control

HID

Biometric

HID, Suprema, IDEMIA, ViRDI, MATRIX TELECOM | SECURITY, NITGEN biometric solutions, eSSL

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SECURITY Shells INFOTECH

8. **Training and Education**
Providing comprehensive training to building operators and facility managers is essential for maximizing the benefits of the BMS. Well-trained personnel can implement best practices for efficient building operations, contributing to sustained efficiency gains over time.

9. **Integration with Renewable Energy Sources**
Integrating the BMS with renewable energy systems such as solar panels or wind turbines optimizes the use of clean energy based on building demand and weather conditions. This integration further reduces reliance on conventional energy sources and promotes environmental sustainability.

In conclusion, enhancing the efficiency of a building management system requires a holistic approach that integrates technology, data analytics, user engagement, and continuous improvement strategies. By adopting these strategies, building owners and facility managers can achieve significant cost savings, improve occupant comfort, and make substantial strides toward environmental sustainability goals. Embracing innovation and leveraging data-driven insights are pivotal in shaping the future of efficient building management systems

Sateesh S.

Project Management Consultant PMP
Bangalore Chapter President,
INBAC Association

Improving Indoor Spaces with IAQ Data

An anecdote by Anshu Sethi

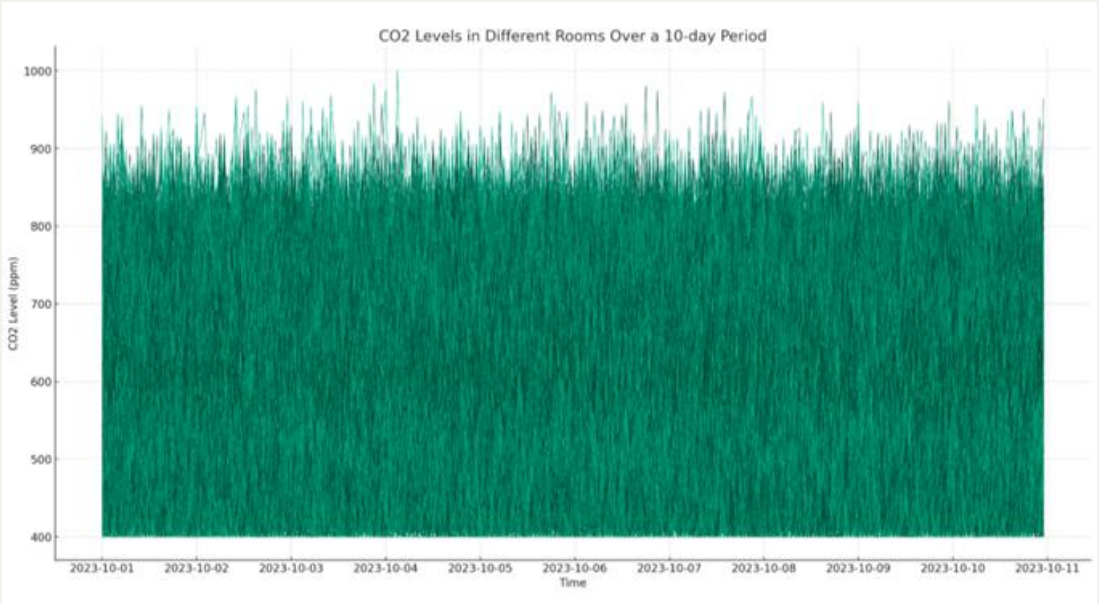
Have you ever experienced fatigue after spending a long day indoors? This could be due to high levels of CO2. The air quality indoors directly impacts our well-being. That's why indoor air quality (IAQ) monitoring has become so important. It's like having a system that checks if the air inside our buildings is clean and healthy.

An IAQ monitor isn't just a device on the wall; it's a tool that helps us understand and improve indoor spaces. It goes beyond just collecting data points; it helps us use that data to make the air better for everyone.

However, monitoring and making use of IAQ data isn't always as easy as you think. Here's why:

Imagine a scenario where a building has 100 IAQ monitors, each capturing air quality data for multiple parameters every minute. That's a lot of data— roughly 16 million points every day and 6 billion every year! It's like trying to navigate through a mountain of information taller than Mount Everest!

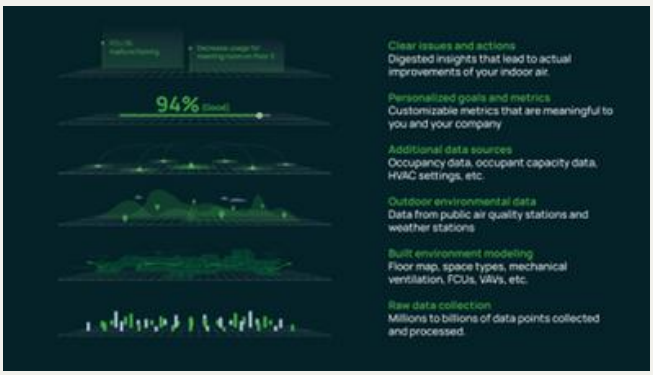
Here's another example to illustrate how hard it is to make use of IAQ data - the below is a graph of just one parameter, CO2, from 100 devices, and it is already impossible to read:



What's more, these sensors collect much more data points than just one parameter - IAQ monitors usually measure particulate matter, carbon dioxide, and volatile organic compounds.

Having sensor data is one thing; making sense of it is another challenge altogether. Many existing solutions struggle with this—they collect data but don't know what to do with it.

Let's look at a real-world example to see how IAQ data can make a difference. In a commercial building, high CO2 levels were making people uncomfortable and less productive. By studying the data, the building management team figured out when and where CO2 levels were highest. They then made changes to ventilation and scheduling, leading to cleaner air and happier occupants.



So, how do we make sense of all this data? That's where advanced IAQ management systems come in. They use technology like data analytics and machine learning to turn complex data into easy-to-understand insights.

An advanced IAQ dashboard, has the ability to take billions of data points and contextualize it with the built environment. It'll take into consideration the floor map, space design, ventilation design, and also incorporate third-party data sources such as outdoor air, take in data from other sensors etc.

IAQ monitoring isn't just about collecting data; it's about understanding the data and translating it to actions that lead to healthier indoor environments. With IAQ data on our side, every breath we take indoors can be optimized for well-being. By turning data into action, we can create buildings that are not only comfortable but also keep the people inside healthy and productive.

Anshu Sethi
Indoor Air Quality Enthusiast

THINK SMART
THINK INBAC!

Guardians of the Digital World: Keeping Our Smart Places Safe

In the middle of our busy cities, where new stuff blends with tall buildings, there are smart buildings. They're super cool because they have lots of fancy technology that makes life easier and helps the environment.

But inside all this fancy stuff, there's a secret hero—a guard for the digital world. This guard doesn't have a name, but it has a big job: to make sure our smart places stay safe from sneaky computer problems.

Think about it like this: imagine every light turning on and every air conditioner starting up without anyone touching a button. That's what happens in these smart buildings. But with all this tech magic comes a problem—bad people might try to mess with it.

So, our secret hero keeps an eye on everything. It looks at all the computer stuff to see if anything weird is happening. And if it finds something fishy, it stops it before it causes any trouble.

But it does more than just watch. It's like a super builder, making strong walls out of computer code to keep the bad stuff out.

It puts up virtual walls, locks away secrets, and stands guard at every digital door.

In the halls of our smart buildings, where computers hum and secrets whisper, everyone knows how important it is to stay safe online. It's a promise we make to ourselves and the future—that our smart places will always be safe and sound, no matter what.

So, as we look to the future, we can be glad our secret hero is always watching out for us. With its help, our smart buildings can be not just cool, but safe places where technology helps us without any worries.

"Empower yourself with knowledge, fortify your digital fortress, and stand tall in the face of cyber threats. In the realm of cybersecurity, vigilance is our shield, resilience our armor, and unity our strength."

Gaurav Karale
Storyteller | IOT Enthusiast

Building Technology BizBits Team

Sakhee Chandrayan

23+ years industrial experience leading global teams for product strategies, businesses and customer experience focused on enterprise-scale software for sustainable building solutions and open standards and protocols. She has been engaged in the techno-social movement in India by bringing together visionary industry leaders to create an ecosystem for sustainable growth and interdependence empowering Smart Infrastructure in India.

Adrija RoyChoudhury

Electronics engineer who has been instrumental in expanding INBAC's network, playing multiple roles as a designer, marketing, and operations executive. She designs creatives for marketing campaigns and social media handles of INBAC, also create content videos for the academic ventures of INBAC. She has been hosting and representing INBAC at various events.

Ajit Chigteri

41+ years of Experience in Automation & Electricals in Domains of Oil & Gas, Pharma, Chemicals & Metals & Mining. In Operations, Pre-sales, Site Management .
Professional certification in 6 Sigma- Green Belt & ISO Internal Auditor
Current Organisation- Mcube Partners LLP (Founder Director), A 360 Degrees Consulting Company.

Parth Shah

I have a total of 10.5+ years of experience in Digitalization and building automation. Currently working as Business Development manager at FPC GLOBAL consulting.

Anukriti

I have total of 6+ years of experience in ELV and Building Automation products. Currently working as Sales Co-ordinator in Jay & Co. India Pvt. Ltd.

"Individually, we are one drop. Together we are an ocean"