# RA2 Select

Lutron has recently introduced a new system that sits in between their RadioRA 2 and Caséta system. It’s call the RA2 Select. RA2 Select has integrated the best from both systems and put it into a package that is more affordable to customers that seeks the flexibility of RadioRA 2 at lower prices. It also uses the Caséta phone app to do the programming, making it much easier for the end user to play around with their scenes.

RA2 Select uses all the existing RadioRA 2 devices such as the Maestro dimmers and PICO wireless control. However, seeTouch keypads and RF modules and wireless occupancy or daylight sensors are not yet available. It uses a different repeater called the RA2 Select main repeater, which is the equivalent of the main repeater plus the Lutron connect bridge in one module. This helps customers saves money because they no longer need to buy two separate components to do the same thing. It can host 100 devices total in a system and can have up to 4 wireless repeaters to extend the wireless range.

RA2 Select is using the “Lutron Caséta & RA2 Select App” to do all its programmings available to Android or iOS devices. This makes programming a lot easier than RadioRA 2 as that system you will need to have a computer with proper software to program and create/edit scenes of your home.

RA2 Select is also extremely easy to upgrade. If at any point the user decided that they need the seeTouch keypads or any of the sensors that only RadioRA 2 has, all they need to do is the get the RadioRA 2 main repeater and Lutron connect bridge and swap out the RA2 Select main repeater. There will be no extra devices that needs to be replaced therefore saving the home owner a lot of time and money.

# GOOD HOME AUTOMATION SYSTEM

Trying to decide on a good home automation system? Maybe this will help:

What is the difference between a good home automation system and a bad? I'll tell you… A good home automation system is easily understood by the homeowner. They should be able to change scenes and make adjustments whenever they need to. If they add more devices, it should be an easy addition. Lutron Caseta, RadioRA2 and RadioRA2Select are good examples. Do what you want when you want. Product Info & Brochures

A bad home automation system: Highly functional but the homeowner needs a programmer to show up and, basically write code to program the thing. Where is the sense in that? I spoke with a salesperson from #RTi and they said this system is so hard to set up and program, they "can't just sell it to anyone". Wow, that's a hard thing to wrap my head around. Get something that you and your family will understand and not have to go to a coding boot camp for.

While complex systems make sense for some people, I've found that most homeowners are looking for simple to advanced functionality, compatibility (Apple Homeworks i.e.,) great aesthetics, ease of use and a great price point. The other thing homeowners look for in a good home automation system is the ability to scale. Maybe they want to add some controls for

blinds or want to heat or cool their home before they arrive. Landscape lighting automation is quickly becoming a hit as well.

Contact Lite Rite Controls can help you find the system that fits your need. From planning, products to programming, we can help you to build the smart home of the future.

We Create What You Control

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# 3 Things We Love About Acuity's nLight

As a controls and lighting company, Lite Rite Controls is often asked to bid jobs that have nLight as the Commercial Building Lighting Control Systems. For those of you not familiar with nLight, I have added a brief description below of both nLight and nLight Air.nLight is a networked digital lighting control system that provides both energy savings and increased user configurability by cost effectively integrating time-based, daylight-based, sensor-based and manual lighting control schemes. nLight creates an unmatched level of distributed intelligence.

nLight Air is a secure, high-performance wireless platform designed for integration into various lighting controls applications that seamlessly connect both indoor and outdoor lighting systems to Smart Building Ready solutions.

**Benefits Include:**

- Easier installation – fixture embedded smart sensor remove guesswork, saving time and money

- Industry leading 5-tier wireless security architecture
- Energy savings with occupancy and daylight sensing – up to 30% additional energy savings
- Aids in meeting and/or exceeding state and local energy codes
- A scalable and upgradeable smart building ready solution
- Choose from a wide range of nLight AIR wireless enabled fixtures from Acuity Brands

Check out this nLight Video: https://www.youtube.com/watch?v=jXlGJvN9x4Q

Renpeng Zhang, a Lite Rite Controls employee and recent graduate from Long Beach State University, recently attended training on Acuity nLight products. Renpeng has experience programming and designing many different commercial building control solutions currently on the market and I wanted to find out what his thoughts were on the nLight product.

Jerimiah Hubner Lite Rite Controls (LRC): How did the nLight training go?

Renpeng Zhang (RZ): Yeah, it went really well. I liked that nLight is completely customizable. The training was very hands on, which I enjoyed.

LRC: That’s cool. Can you tell me about nLights customizable features?

RZ: Well, there are more customizable control features for

commercial building control systems. One of the features is the “grace period” timing controls*. This controls how much time the occupancy/vacancy sensor takes before turning off lights or plug loads. Most products have a 10 second grace period. nLight allows for control over this option, which is important for the usability and comfort of tenants.

The second customizable feature that I thought was important was that up to 16 virtual buttons can be added to the nPOD GFX. This allows for greater scene and setting control.

LRC: Sounds like nLight has taken notice that usability and functionality are top priorities for tenants. What about EC’s and installation?

RZ: Contractors say that it is easier to build rooms with the nLight product because it is systematic with zones or channels. The electrician can install nLight in a single room, test it individually and ensure that it is functioning. If rooms will be added to the system, the EC can connect / integrate the rooms via the nLight Gateway or Eclipse. If the EC is also programming the system, nLight’s Sensor View software will be used. For less advanced and simple programming, nLight can be programmed with the nPOD GFX.

LRC: Can nLight connect with mobile devices?

RZ: Yes, but only with the Eclipse controller. This allows communication with the Eclipse interface on a secure web browser via PC, laptop or any other mobile device. This enables profiles for different rooms. Imagine there is a conference room that is mainly used for presentations. You

could basically program a “presentation” scene or mode into the profile for that room and lights would automatically adjust. The possibilities are endless.

LRC: Thanks for sharing your experience with Acuity’s nLight product, Renpeng.

Want to learn more about nLight and nLight Air? Click Here

Commercial Building Lighting Controls is a booming business (Click Here to see Forecast). With so many different types of commercial controls systems on the market it’s hard to keep up with the latest and greatest. That’s our job here at Lite Rite Controls. Send us your plans and we can help you with great pricing and assurance that any system you are installing will work seamlessly.

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# Mesh systems in commercial lighting controls and their advantages

There are a lot of lighting controls systems on the market today. Although people usually talk about each lighting controls system's function; the method of how each device in the system communicate with each other is also very important but rarely being discussed.

Some of the systems use traditional wired communication via Cat 5 cable. One example of this would be the Blue Box from LC&D. This kind of system is great for small to medium scale project, but rarely used in larger project due to the high labor cost it generates; the contractor would need to run long cables throughout the building. This kind of communication method is just simply not capable for such large projects.

That’s why a lot of the lighting controls systems have developed a wireless communication method. One of the example of this kind of communication would be the Lutron Energi TriPak system. Each device of the Energi TriPak system communicates to its power pack wirelessly. This saves a lot of labor costs. All a contractor needs to do is install the power packs and sensors to its designed place and they are done. However, this kind of the system has a big problem when facing large rooms where each sensor is very far away from the power pack.

If the center broadcasting device is offline, then the users will not be able to control the entire zone. If the distance between the power pack and the other control devices in the zone is too large, then the wireless signal from occupancy sensor or a Pico switch will not be able to reach the power pack. Making the control of the zone impossible.

This is where the benefits of a wireless mesh network come into play. Unlike a traditional wireless network, a mesh network functions like multiple mini versions of broadcasting device on top of their normal functions. Each device is a node and can both receive and broadcast information. If one route is down, then the network can signal from other paths where it’s online. This way, if the power pack is on the far-left side of the room and the wireless switch is on the other side; then the switch can talk to the occupancy sensor in between them and carry the signal to the power pack to switch (on/off) the light. With traditional wireless system, everything needs to wirelessly connect to the power pack; in a large space, like the example, it would be impossible for the wireless signal of the switch to reach the power pack.

One of the lighting control system that uses this kind of communication method is the XPoint Wireless from Acuity Brands. A zone of XPoint Wireless consists the Load controller and various sensors. Each device can both receive and broadcast signals, therefore making the system perfect for

larger rooms where traditional wireless signals cannot reach to every single device.

Although there aren’t many lighting controls systems that utilize mesh wireless network communication. It definitely is a perfect alternative to the traditional wireless lighting control systems. For more info on lighting controls visits our website **here**.

Here are some great articles related to the mesh networking with lighting controls.

**Link Building Controls with a Mesh Network**

**Wireless 101: Mesh networking**

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# COMMERCIAL BUILDING CONTROL WITH LUTRON VIVE


**5 BENEFITS OF COMMERCIAL BUILDING CONTROL WITH LUTRON VIVE**

Lite Rite Controls recently spoke with Chelsea Till, Senior Sales Engineer at Lutron about commercial building control with Lutron Vive. We wanted to find out what set **Lutron Vive**

apart from other commercial building control systems. Here is our recent conversation:

**Lite Rite Controls (LRC):** Hello Chelsea and thank you for answering a few questions about Lutron Vive. Can you tell us what makes Lutron Vive offering superior to other commercial building control offerings on the market today?

**Chelsea Till (CT):** Lutron Vive is a great solution for commercial building control for a number of reasons. One, most of the products have been available for about 10 years and have been installed in many different scenarios, including historical buildings, medical treatment facilities, government, education, and retail. The system is compatible with many different types of light sources and dimming protocols. Its wireless backbone is Clear Connect, which in my opinion is one of the biggest and most important differentiators of our product on the market.

**LRC:** Can you tell us a little more about Clear connect and why it's important for commercial building controls?

**CT**: Clear Connect technology was developed before Wi-Fi was even available. 434MHz is a channel with specific FCC mandates that limit the total amount of communication time between devices. Because of these mandates, very few wireless devices use this channel, which means no interference with other systems. Another reason why 434MHz is the best channel for commercial lighting control communication is the increased distance the signals can travel and the types of materials it can travel through. Load Controllers have a 30/60 ft. rule and the hub can talk through any construction material within 71ft.

**LRC**: How long has Lutron been developing and testing Vive technology?

**CT**: Clear Connect was created sometime around 1997. Energi TriPak first debuted in 2008. The Vive hub was in R&D for about two years before the full launch of the product last November (2017).

**LRC**: So Lutron Vive's technology has an established track record. That's great. Is there a challenging job that Vive was used on and will you talk about how Vive worked through those challenges? **Applications for Lutron Vive**

**CT**: We had a 100-year-old high school with asbestos and lead all over everything. The hallways are over 250 ft. long. The school wanted to use sensors to shut off lights when no one was in the hallway. However, running wire is too costly because of the required abatement. Using wireless load controllers and the Vive hub, we ended up using time clock functionality to save energy. This solution was the most cost effective because of the decreased wiring labor, much less asbestos and lead interference (if any at all), and we removed sensors from the hallways that could be damaged in a high school environment.

Another solution was using the **Pico Remote** to solve ADA compliance. The same 100-year-old school with lead and asbestos. We kept the switch in its current location but replaced it with a **Maestro Wireless switch (or dimmer)**. The Pico was then placed at the correct ADA height. This gave proper control to both disabled and non-disabled occupants.

**LRC**: Great solution for a difficult situation. Overall, what are customers saying out there about installation and programming?

**CT**: General feedback is that this product is very simple to install, simple to program, and simple for the end user to understand. One of the great things about this product is the rolling commissioning. Once you commission a room, that space is up and running and you can add other spaces at any time

without disturbing the initial rooms.  This product also allows you to build a system that’s right for you, by starting standalone only and adding a hub later, or jumping in head first, right away.

**LRC**: Simple, affordable and scalable solutions for today’s demanding energy codes, even under the most demanding circumstances. It’s no surprise that Vive by Lutron is generating so much interest. Thank you for taking the time to answer our questions.

Enjoy this five minute video with Edrei about Lutron Vive.

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# VIVE VIDEO SUPPORT

Introducing a revolutionary wireless lighting control solution for new and existing commercial buildings. Vive wireless solutions offer a multi-strategy approach that accommodates your budget and performance needs now, and for the future of your building. Visit lutron.com/Vive today for more information.

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# Five Things To Consider With

# Home Automation


**Five Things To Consider With Home Automation**

I've been dreaming about a home that knows my needs and habits and reacts to them simply by being. The idea of home automation and pushing a single button and my living room turns into a theater is just so cool. The future: That's where I want to live. Come on, you know when a movie comes out and it's about the future, you want to see all the crazy, cool inventions **(think Demolition Man and the three seashells)**.

On the other hand, I worry all the time about the cost of the future. Who's using my data and why does it seem like, if I talk about wanting something, it magically appears on my next web search? Am I so lazy I can't turn on a light or adjust a thermostat? Why does my Samsung TV have a microphone? That's weird. Not to be cliché, but, it's all very Orwellian.

I came across an article written by Gareth Stokes and Anita Basi. They are lawyers for a firm called DLA Piper. Perhaps you've heard of them? They are global and, from what I've read, pretty dern smart. The following is an excerpt from an article they wrote and a few comments from a guy who's not half as smart as the two authors, but likes to share his viewpoint anyway, *ME*.

**Five Legal Challenges for Home Automation and the Internet of Things**

So-called 'homes of the future' have been a recurring theme for more than 50 years in popular culture and the technology

industry.

When Hanna-Barbera created The Jetsons cartoon in 1962, for example, they had some interesting ideas about what the world would look like in 2062. Fifty-four years later and some of those ideas don't look so out of place; mobile phones, flat screen televisions and video calls are now all firmly established features of everyday life. And, while we haven't managed to mass-produce flying cars and pneumatic tube transport (yet), big steps have been made towards making automation commonplace in our homes. *The Jetsons was one of my favorites. Funny how it always came on after The Flintstones.*

Modern technology provides the ability to control third-party smart devices through a single interface. In practice, this means that people can switch off lights, lock doors, turn down thermostats and close window blinds at the push of a button. This suggests that we are moving ever closer to a unified Internet of Things (IoT), with George Jetson's space-age lifestyle beginning to look like an attainable reality. Inevitably, alongside the opportunities, there are a number of challenges in the sector, not least the difficulty in getting consumers to embrace smart devices.

## **Reliability**

For home automation to succeed, developers must address concerns about the reliability of smart devices compared with traditional home products and equipment. If connected devices do not possess similar functionality to precursor products, they could create a new class of problems, such as how to ensure service continuity in the event of an unexpected breakdown or service failure.

*Think about the transition from landline to mobile phone. How many peoples parents and grandparents kept that landline active? How many are still active? The good news is that even if you decide to automate your entire home, there will still*

*be a few switches that will be put in place as a failsafe.*

A large-scale service outage is one thing, but a connected device or home automation vendor is also at the mercy of the consumer's broadband connection.

*To be fair, as of May 31, 2017, 25% of homes in the United States have the gold standard of residential internet connection, FTTH or Fiber to Home according to broadbandnow.com. Click here to learn more. This number is expected to double by 2022*.

If your product cannot fall back to some lower standard of useful functionality when an internet connection is unavailable, the consumer's valuation of your product will be harmed every time their internet connection has problems. This creates a large third-party dependency for smart device companies.

## SECURITY

Before consumers put their faith in smart home security systems and home automation, they need to be reassured that no malicious parties will be able to hack into their smart home systems, potentially giving thieves and vandals access to their data or even the ability physically to enter their homes.

With an increasing number of home automation devices, including microphones, cameras and other monitoring technologies, a compromised home automation set-up could allow cyber criminals to record residents in the intimacy of their homes.

Additionally, compromised IoT devices with weak security or set-up processes that allow consumers to use the devices with default passwords unchanged have recently been used as part of huge distributed denial-of-service (DDoS) attacks, programs which take servers offline by overwhelming them with inbound

data.

Implementing strong security measures is essential for IoT vendors if their products are not to become a vector for spying, blackmail, DDoS attacks or worse. Developers need to consider solutions that force default passwords to be changed, and implement end-to-end encryption between devices.

*Fear tactics are not my style. Everyone is aware of cybercrime. If not, you shouldn't worry. You're the wrong demographic.*

*Electricians and IT professionals are going to be best friends in the coming years.* ***Check out this survey from Klein Tools.***

*Having experience in both fields, I know there are solutions to protecting your IoT life, such as VPN's and Firewalls. Talking through and finding solutions to Cybercrime is a better alternative than allowing fear to keep you living in the Stone Age. Talk to an industry professional.*

## DATA COLLECTION AND USE

Many connected home and smart products rely on value propositions that are in part about new functionality, and in part about the 'smarter' use of resources. In order to achieve this, data flows between the devices and servers operated by the device providers, between devices, and to and from the consumer's smartphone or computer.

This creates opportunities to collect data that can be used to improve the service, or be analyzed by marketers to learn about consumers' habits to build and grow existing relationships.

Much of the information being generated and collected is 'personal data' within the meaning of Directive 95/46/EC, and with the General Data Protection Regulation (GDPR) set to come into force in the EU on 25 May 2018, any businesses looking to

take advantage of these opportunities should keep data privacy at the top of their agendas.

Even if the systems are not hacked by malicious third parties, users and consumers need to be reassured that the vendors supplying these products and services are themselves trustworthy.

Vendors need to see compliance with data protection laws as a value differentiator when developing their product offerings and marketing strategies. Vendors that fail to do this will gradually lose out in an increasingly data and privacy conscious market.

*This is a hard one for me. Convenience vs Intrusion. A product wants to make my life easier and market things to me that I have expressed interest in. Not bad. Having real time analysis of movement in my home. Bad. This is a line that either you are comfortable with or you're not. Not sure? What Browser do you use? This can tell you what level of concern you have.*

## DIGITAL TRANSFORMATION AND INTEGRATION

The evolving 'connected home' means that many related professions, such as locksmith, heating engineer and electrician, need to consider putting software at the heart of their businesses and transforming themselves into digital providers to keep up with the market.

These professionals still represent key intermediaries for consumer choices about major installation projects. Vendors that understand this, and provide software tools which can be deployed to interact with particular products, are more likely to benefit from the goodwill generated in the professional community.

Another factor to consider is standardization and the ability

to connect to systems/devices from other manufacturers. Having APIs or other standards-based connectivity solutions that allow devices to control/be controlled by other devices can add significantly to the overall value proposition to the consumer.

This raises the question of which company owns particular standards for device interconnectivity. Where any partnerships with other device manufacturers, app developers or platform providers are to be considered, both parties should address and carefully document how any newly created intellectual property will be owned at the outset to avoid difficulties down the line.

*Many products now have Hub's and Bridges that link different products.* ***Another piece of good news: IoT is getting a common language****. Sorry for all the pop-ups on this site. Not my doing but it's valuable info.* ***Check out Radio Ra2 products here****.* ***Home Automation applications****.*

**Liability**

Solutions to smart device problems often come in the form of updates and patches, which aren't always completely reliable. Developers also need to bear in mind that not all users will download updates as they become available, leading to 'version lag' as devices continue to run older software.

In addition to creating support challenges for vendors, this could leave devices vulnerable to attack. All of this creates a complex situation from a product liability perspective, as the device being used at any given point may function very differently to the device the consumer first bought.

Since many connected devices require an ongoing service component from the vendor to function, the consumer-facing T&Cs associated with a service are one way for manufacturers to try to limit and exclude liability.

The effectiveness of this strategy will vary by jurisdiction, and the law is likely to step in to render exclusions or limitations invalid in jurisdictions with a more protective attitude to consumer rights.

Where the relevant manufacturer has partnered with another device manufacturer or platform provider, these kinds of liability issues can be addressed in the agreements that govern the commercial relationship.

In many cases, where manufacturers simply follow a published standard for device interaction, or use a documented public API, liabilities will be less clearly delineated, and vendors will have to proceed on the assumption that they may bear a substantial part of the risk even if there are extrinsic factors involved.

*I like the idea that any company creating a product that is considered IoT should be responsible for updating and patching their products for a given period of time. If a security issue is found and not addressed within 30 days, said security issue should be freely advertised. No successful IoT based company is a one hit wonder. If your thermostat has a security flaw, patch it and let's keep moving.*

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# COMMERCIAL BUILDING AUTOMATION MARKET FORECAST

Building Automation Market Expected to Hit $99B by 2022

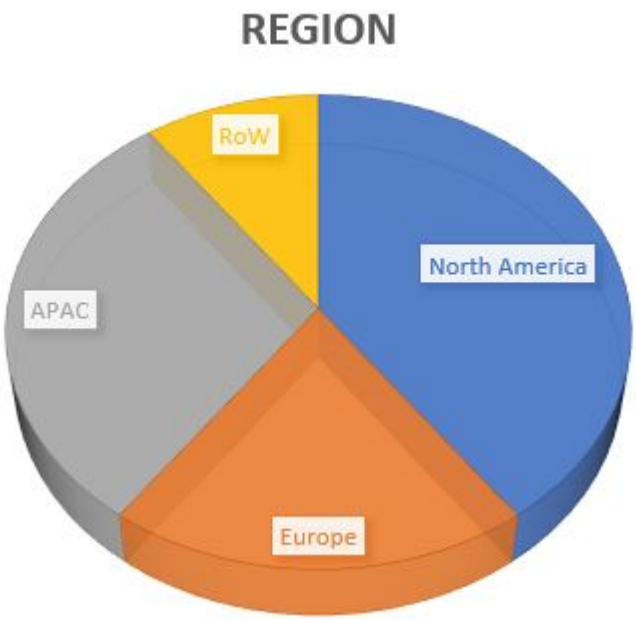
The Building Automation System (BAS) market was valued at $53.66 Billion in 2016 and is expected to reach $99.11 Billion by 2022. That is a CAGR of over 10.5% between 2017 and 2022. The growth of this market is driven by the increase in demand for energy-efficient systems, growing need for the automation of security systems in buildings, and advancement of IoT in BAS.

The increased rate of implementation of BAS in large shopping complexes, office buildings, and public transport areas such as airports and railway stations is encouraging the growth of the BAS market for commercial application.

The security and access control systems are expected to hold the largest size of the BAS market during the forecast period. Security and access control systems have become an integral part of the safety and security of the buildings and their occupants. This has revolutionized the building security and has eliminated the human interventions. These are installed in buildings to increase the security level, monitor the activities, and keep a record of people entering and exiting the buildings. These systems are used in several businesses to protect the assets, staff, and information, monitor the activities, as well as control the access to the building.

The North American building automation market held the largest share of the BAS market in 2016. The rising need for energy management along with the increasing demand for green

businesses has resulted in the growth of the market in North America. Commercial applications hold the largest share of the North American BAS market.

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# Home Automation System Market Worth $79.5B

According to the new market research report “Home Automation System Market by Protocol and Technology (Network and Wireless), Product (Lighting, Security and Access Control, HVAC and Entertainment Control), Software and Algorithm (Behavioral and Proactive), and Geography – Global Forecast to 2022”, the home automation system market was valued at USD

39.93 Billion in 2016 and is expected to reach USD 79.57 Billion by 2022, at a CAGR of 11.3% during the forecast period.

The home automation system market is driven by factors such as the significantly growing IoT market, cost reduction measures enabled by home automation systems, presence of a large number of manufacturers expanding their product portfolios, and the increasing importance of home monitoring from remote locations.

“Entertainment control expected to be the largest market during the forecast period”

The entertainment control market is anticipated to hold the largest share among different products in the home automation system market. The growth of the audio, volume, & multimedia room controls is driven by the convenience offered by these controls for managing and controlling the entertainment systems in a house. Lighting control is expected to be the second-largest market for home automation systems during the forecast period. Lighting accounts for one of the largest electrical loads in homes. Hence, lighting controllers play a vital role in reducing the electricity consumption within the household, along with offering comfort to the users.

“Market for proactive segment to grow at the highest rate between 2017 and 2022”

The market for the proactive software and algorithm segment is expected to grow at a high rate in the forecast period due to their ability to perform a comparative analysis of the energy usage patterns based on the time of day, historical data, and weather conditions.

“North America expected to dominate the home automation system market between 2017 and 2022”

North America is home to some of the prominent companies in

the global home automation system market including Honeywell International Inc. (U.S.), Acuity Brands, Inc. (U.S.), Johnson Controls Inc. (U.S.), United Technologies Corporation (U.S.), Acuity Brands (U.S.), and Crestron Electronics, Inc. (U.S.). This is the major reason for its dominance in the home automation system market. The demand for domestic energy management systems and the growing trend of green homes have contributed significantly toward the growth of this market. The number of smart homes in North America, especially the U.S., is much higher than that in any other region in the world. This market is expected to grow at a steady pace during the forecast period. Major players involved in the home automation system market include Legrand, Ingersoll-Rand PLC, Schneider Electric SE, and Honeywell International, Inc., ABB Ltd., Control4 Corporation, Crestron Electronics, Inc., Johnson Controls, Inc., and Siemens AG.

Information provided by

Markets and Markets – provides quantified B2B research on 30,000 high growth niche opportunities/threats which will impact 70% to 80% of worldwide companies' revenues. Currently servicing 5000 customers worldwide including 80% of global Fortune 1000 companies as clients.

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# Benefits of Building Automation Systems

**Benefits of Building Automation Systems**

**Lowers Utility Costs:** Building Automation Systems typically save 15% of the operating costs of the equipment. For most buildings, this results in savings that range from $0.20 to $0.40/ ft².

**Maintains Measured Comfort:** Computerized controls help to maintain even temperatures and lighting levels within the facility to provide measured comfort. Maintaining consistent temperature and lighting levels cuts down on wasted energy.

**Enhances Property Value:** The value of most commercial buildings is related to the net operating income. Lowering utility costs increases the net operating income on a dollar for dollar basis. Every $0.10/ ft²saved in energy could increase the market value of the property by $0.80/ ft². A 100,000 ft² building could increase in value by $120,000 by reducing energy costs $0.15/ ft².

**Reduces Occupant Complaints:** A more comfortable building means fewer occupant complaints. This means less time resolving complaints, happier occupants, and a more productive business environment.

**Increased Productivity:** Better ventilation and air quality improve greater worker productivity and less sick time. The value benefits average $25.00/ ft². With decreased sick days translated into a net impact of about $5.00/ ft²and increased in productivity translated into a net impact of about $20.00/ ft².

**Simplifies Building Operation:** Computerized controls and real

time graphical displays let you see exactly what is happening with the equipment in the building without having to go up on the roof or crawl up into the ceilings. This saves on costly troubleshooting visits, and simplifies operations.

**Reduces Maintenance Costs:** Running the equipment less and controlling it better reduces wear-and-tear and keeps maintenance costs down, and extends equipment life.

**Avoids Business Interruptions:** Unexpected equipment breakdowns can cause costly business interruptions. The cost of employees and/or processes in a building can be 75 to 100 times the facility operating cost on a square foot basis. The impact when customers are involved can be even more costly. Breakdowns and emergency repairs are very expensive. Computerized controls monitor equipment status and help you head-off unexpected problems.

**A Great Investment**: Most systems will pay for themselves in less than two years.

Typical numbers for an owner-occupied 100,000 $ft^2$ building would be as follows:

- Total system cost $200,000 ($2/ $ft^2$)
- Utility Company rebate $30,000 (15% rebate)
- Annual energy savings* $15,000 (15% savings)
- Annual productivity loss avoidance * $50,000 (1% savings)
- Annual O & M cost avoidance* $10,000 (10% savings)
- Simple payback 1.3 years

*Annual cost avoidance year after year.

**How Does Building Automation Work?**

**HVAC and Lighting Controls:** Stand-alone computerized controllers are installed to take over the control of building HVAC (heating, ventilation, and air conditioning) systems and

lighting. The building is not only scheduled more closely but it is also operated more intelligently and efficiently.

**Outside Air Optimization:** The proper control of outside air provides necessary inside air changes for occupant comfort and health, minimizes energy costs by space pre-conditioning, allows for enthalpy-based free cooling (Learn more about Enthalpy), and reduces the use of outside air when it is not needed.

**Coordinating Equipment:** Orchestrating the operation of building systems, so that equipment works together, saves energy and improves comfort. Individual control systems that are not centrally monitored and coordinated can fight each other or malfunction, causing comfort problems and wasting considerable energy. BACnet based BAS can interface to existing or planned systems so that the building will run smoothly and at peak efficiency without expensive duplication of controls or unnecessary complexity.

**Graphical Operation:** Simplifying facility operation and integrating data from various systems in a unified manner is best accomplished with a graphical user interface. This eliminates the need to memorize commands or point numbers, and allows the operator to take a walking tour of the facility from the console. Existing systems can be easily upgraded to add this powerful operational tool. Point and click graphics empowers management by letting everyone see what is going on and taking the mystery out of proper operations.

**Direct Digital Controls (DDC):** Upgrade older existing equipment to DDC to match new equipment functionality. These controllers come standard on most new mechanical equipment and are more reliable, require less maintenance, provide more sophisticated control, and are less expensive to purchase and operate.

**Tighter Scheduling:** Conventional controls, such as analog time

clocks, are inaccurate and are typically setup to run equipment longer than needed. By automating this function with computerized controls, the computer can predict the optimum time to start/stop equipment based on an astronomical smart schedule and eliminate waste caused by excessive runtime.

**Smarter Control:** HVAC equipment is typically sized to handle the building load under worst-case scenario (conditions). Most conventional controls are set up to always meet these design criteria. With the automation system, control set points and strategies can be adjusted to meet only the actual load, eliminating unnecessary waste.

**Interested in implementing commercial building controls?**

Lite Rite Controls specializes in lighting controls which can integrate into your building automation system. We have Lutron Vive and Crestron Zum, systems that are scalable and easy to use. Contact us to learn more.

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or

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