INTRO
TO
SMART
HOMES

BEGIN WITH THE END IN MIND

One of the best tips I can give you is to Begin With The End In Mind. What do you want your Smart Home to look like when it’s all finished?

➜ What Features do you want? What do you want the User Experience to be?

➜ Will it have a Home Theater, a Media Room, or secondary surround sounds?

➜ Will it have lighting control, shade control and climate control?

➜ Will it have Integrated Security and Surveillance?

I’m not asking what your Smart Home will look like when you first move into your home, or when you first finish your remodel.

I’m asking what it will look like when you are completely finished growing and adding to your Smart Home? What’s the big picture?

This big picture tells you everything you need to help you find the right Smart Home platform.
AUDIO

Nothing sets a mood for like music. With architectural speakers you can fill your whole home with music.

THEATER

Skip the crowds and enjoy audio and image quality that rivals the local cineplex.

OUTDOOR AV

Take it outside. Enjoy music, TV's and even surround sound in your back yard.
There are so many Smart Home devices and solutions in the market. It can be really overwhelming to navigate. To help you make sense of it all, I came up with this idea of the Smart Home Spectrum.

Imagine a horizontal line running left to right, and spotted all across the line, are the many Smart Home Devices and solutions.

On the left side of the Spectrum you have Integrated Security and surveillance. In the middle of the Spectrum you have Lighting, Climate and Shade control. And on the right side of the spectrum you have Audio and Video Control.

Obviously we’re missing a number of Smart Home devices and solutions, but hopefully this is painting a picture for you. This is the entire spectrum of Smart Home solutions that you can choose from to include in your home.

What you need to understand is that no one single Smart Home Platform (Control4, Samsung SmartThings, etc.) can cover the Spectrum entirely on its own.

There isn’t a platform, including Crestron, that can cover the entire Spectrum without help from other 3rd party Smart Devices and solutions.
SMART HOME PLATFORMS

A Smart Home Platform is the main system, or App, running all the Smart Home devices in your home. Control4, Savant, Samsung SmartThings, Apple Home Kit, Amazon Alexa, etc., these are all examples of Smart Home Platforms.

It’s normal for a Smart Home to have multiple platforms, but you’ll always choose one of them to be the ‘Master’ system.

We see this a lot with Lutron, which is a Platform specializing in Lighting and Shade control. Many of our clients prefer Lutron for lighting and shade control, but want a platform like Control4 or Savant be the Master. So they’ll use Control4’s app to drive the Lutron lighting and shades.
SAVANT

With its elegant interface and powerful AV controls, Savant is popular with clients who care about esthetic as well as control.

CONTROL4

Powerful automation capabilities make Control4 the choice for demanding home and business systems.

2GIG

Perfect for DIYers. Combined with Alarm.com, 2GIG offers the best in home security and light automation.
3 TYPES OF SMART HOME PLATFORMS

Generally speaking there are 3 types of Smart Home Platforms: Hubs; Controllers; and Hosts.

**Hubs**
Hubs are wireless. They’re able to integrate with other Smart Devices in the home via wireless technology like ZigBee and Z-wave, and in some instances the home network.

Hubs are geared towards DIY solutions like Samsung SmartThings, Wink, Apple Home Kit, Amazon Alexa, etc.

**Controllers**
Controllers support wireless communication like Hubs, but also support hardwired connections.

It often surprises people, but Hardwired connections are still extremely important in Smart Home systems. I’ll tell you in a minute why this is so important, but for now just know that Controllers support both wireless and Hardwired connections.

All of your Pro Smart Home Platforms, systems like Control4, Savant, Crestron, etc., are going to use Controllers.

**Hosts**
A Host is a computer that runs the Smart Home. Savant’s top system is an Apple Mac Mini with Savant’s software loaded on. The benefit of a host is that it gives you more horsepower.

In a larger system with multiple users, zones of audio, lighting and TV, you’ll benefit from having a system that can handle and process all the moving parts of the system quickly.

Hosts are able to control other devices via the network, but
often times require the addition of a Controller for hardwired connections in the home.

### 3 Types of Control
There are 3 ways that Smart Home platforms control, and communicate with other devices in the home: Wireless; Hardwired; and via IP -- or control over the network. It’s helpful to understand all three on a basic level.

But first I want to introduce you to the idea of 2-way feedback.

#### 2-Way Feedback
Lets say you want to lock your door from your Smart Home app. After you hit the ‘Lock’ button, you want to know if the door is actually locked.

This is called ‘2-way feedback.’ You want and need the lock to send its status back to the Smart Home.

As obvious as that sounds, many Smart Devices on the market don’t support 2-way feedback. Sometimes it’s the devices programming, and sometimes it’s the type of control.

As you’re shopping for devices you’ll want to consider whether the devices and methods of control support 2-way feedback.

#### Wireless
In the Smart Home Space, when we say ‘Wireless,’ we’re not talking about the home Wi-Fi.

There are 3 go-to wireless technologies. A few companies like Lutron have proprietary Wireless technology, but we’ll stick to the big 3 for now.

#### Z-Wave
Z-wave is a mesh network. That’s a fancy way of saying that each Z-wave device acts as a repeater, and boost the signal onto the next Z-wave device in the home. The more Z-wave devices you have in the home, the bigger the network gets.
Z-wave is traditionally the least expensive wireless Smart Home technology, and used often with Lights, Thermostats, and Door Locks. But we’re seeing it pop up in more and more products like the innovative Smart Vent from Keen.

**ZigBee**
ZigBee is a direct competitor to Z-wave. It is also a mesh network. It has a stronger signal than Z-wave, and many consider it a more reliable signal.

**Bluetooth**
We’re still waiting to see if Bluetooth will catch on in the space. Kwikset’s Kevo lock looked to make Bluetooth popular, but it hasn’t quite broken into the space yet.

In the past Bluetooth was a line of site technology. So you had to be within 30’ of the device you were trying to control, and you had to be able to see the device.

Bluetooth released an update, which essentially made it a mesh network like Z-wave and ZigBee. Where Bluetooth was already on everyone’s mobile devices, the expectation was that Bluetooth would surpass Z-wave and ZigBee. At least for the moment, it doesn’t seem to be the case. It’s very much a wait and see approach.

**Hardwired Connections**

**IR – Infrared**
Technically IR is a wireless technology, but it will make sense in a minute so stay with me. If you’ve ever used a TV remote to turn on a TV, than you’ve experienced IR.

A blinking light on the front of your Remote sends a command to the TV. An IR sensor on the front of the TV sees the command, and tells the TV to turn on.

In Smart Homes, we usually hide all the Video Components out of site; so things like your Apple TV, Roku, Blu-ray, and Satellite/
Cable receivers, etc.

IR requires line of site, so we have to get a little creative to control devices that are hidden. We do this by sending the IR signal over a wire. A small bulb at the end of the wire blinks just like your TV remote, and sends a signal to the devices you’re trying to control.

IR has been around for a long time, and is very common in Smart Homes and Home Automation, but it does not support 2-way feedback.

**Serial**

Don’t let the name rattle you. Serial is a fancy way to say we’re sending the command over wire to the device we’re trying to control. We see this a lot with TVs, Video Sources, Pool & Jacuzzi Controls, Shades and HVAC.

The benefit with Serial is that it provides 2-way feedback. You can imagine why that’s so important with something like Pools, and your HVAC, but it can be really beneficial with your TV and Video Components as well.

The challenge is that not all devices support Serial Control. So when you’re shopping for TVs, Video Components, etc., you have to check to see if Serial Control is supported.

**IP**

IP Control is just Serial control over the home network. Which means technically you can do it with a wireless connection, but I recommend hardwiring the network into anything you want to control via IP.

Like Serial, not all devices support IP. Even a lot of ‘Smart TV’s’ that connect to the home Wi-Fi, don’t support IP. So you want to verify.

I prefer IP to Serial or IR. I know many professionals in the space that still prefer Serial because your network will go down from time-to-time, and that means your IP Control will go with it.
I understand that, and you can always use Serial, but I have a strong preference to IP, and I think we’ll see most things move that way in the future.
MANUAL CONTROL, AUTOMATION, AND INTEGRATION

At the core of the Smart Home industry, is the idea that you get greater control of your home.

But Control means a lot of different things inside the space, and understanding that will help you design the right system.

**Manual Control**
Before Smart Homes, if you wanted to turn the lights on or off, you physically flipped the light switch. You recognize this as Manual Control of the light switch.

But with many Smart Home solutions, what we’re calling ‘Smart’ is really just today’s digital form of Manual Control. Rather than flipping your light switch, you press a button on your Smart Home App to trigger the lights.

It’s cool, it’s sexy, but it’s still just Manual Control. Popular products like Amazon Alexa-enabled devices and Google Home, are making Voice Control popular. But again, Voice Control is still just manual control.

Now let me be clear here. I’m not suggesting this is a bad thing. I just want you to recognize the control for what it is. It’s manual control, and as long as you understand that you’ll be happy with the final design of your system.

**Automation**
Home Automation occurs when the home acts and thinks for itself. Lights come on and go off, as you enter and exit a room. Shades roll up and down with the sunset and sunrise. Music and your favorite TV channel come on when you enter the gym. Entering your bedroom at night shuts the rest of the house off.

Ok you get the idea. That’s Automation. For the purist out
there that’s a ‘Smart Home.’ These automated ‘Scenes’ help the home run without you doing anything.

**Integration**
Integration occurs when two pieces of technology talk to each other. As popular as Smart Homes have become, there’s still no universal programming language. All Smart Devices talk a little differently.

Imagine two people trying to speak to each other in a different language. They would have to use a translator. In Smart Homes, this translator is your Smart Home Platform; so it’s your Hub; your controller; or your Host.

So why are we talking about Manual Control, Automation, and Integration? It doesn’t really matter what your system does, but it does matter that you know what you want it to do.

Getting back to our Smart Home Spectrum discussion, you’ll need different gear depending on the levels of automation, integration and manual control that you want in the home.
HIDDEN WIRES
Structured wiring conceals eliminates unsightly 'cable clutter'.

SURROUND SOUND
In-Ceiling speakers can bring surround sound to any space.

SURROUND SOUND
Want surround sound outside? No problem.
WHAT DOES A SMART HOME COST?

By now you’re probably wondering what this all cost? The good news is Smart Homes have come way down in price over the years. Today, I really believe there’s a Smart Home solution for anyone who wants one.

Over the years I’ve come up with a simple guide to give you rough numbers for a starting point. Most Smart Homes cost 2-5% of the total price of the home.

Remember, that’s a rule of thumb. We’ve seen Smart Homes cost more, and we’ve seen Smart Homes cost less. But most Smart Homes fall in that 2-5% window.

If you included every imaginable device on the Smart Home Spectrum the system would cost significantly more than 5%.

But here’s what you have to realize, very few Clients ever cover the whole Smart Home Spectrum. Even when they’re done scaling, and growing the system, the finished System only covers a portion of the Smart Home Spectrum.

That’s because a lot of what you could do on the Spectrum, won’t interest you, but the items that do excite you will likely fall in that 2-5% range.
ARE SMART HOMES RELIABLE?

These days everyone knows someone, a neighbor, a family member, a friend, someone who’s had a negative experience with a Smart Home.

I hear it all the time, my friend paid all this money for a Smart Home and the dumb thing doesn’t work. And then the question follows…. ‘Will this thing actually work?’

ABSOLUTELY!

Not only that, it can be very reliable. It’s all about Design. You have to fit the pieces together correctly, and if you’ve read this you’re already way ahead of everyone else. But the two most important elements for a reliable system, are the system design, and your home network.

System Design

I’ve got a great YouTube Video about this here, and we’ve talked a lot about System Design already, so I won’t go into this too much. But System Design is everything.

There’s this idea that a ‘Great Custom Programmer’ makes a great system. And in my experience that couldn’t be further from the truth. A well-designed system is King!

Home Network

If the System Design is King, the Home Network is Queen, and the Queen rules the house. You have to invest in a solid Home Network if you want a reliable Smart Home.

That doesn’t mean you have to break the bank. There are a number of budget friendly solutions. At the moment, we use Eero for a reliable budget solution. When Clients are able, we use a more commercial grade solution like Ruckus.

Whatever the solution, don’t cheat the Network. It is the backbone of your system, so make sure it’s designed well.
WRAPPING UP

I know that was a quick sprint. But hopefully it gives you a foundation to start from. To help keep you going with your research, we’ve put together a list of our top blogs, videos, and tutorials and categorized them so it’s easy for you to find.

You can find it all at our Start Here Page.

If you find you have a question about some aspect of Smart Homes or Home Theaters, that we’ve not answered, leave us some comments on our site, or reach out and connect with us on Social Media. You can find us on Facebook, Twitter, Instagram, Youtube, Pinterest, & Snapchat

I hope somewhere along the way we meet, and get to hear about your Smart Home and Home Theater Project.

All the best,

Matt