How to Choose a Home Automation System
(a step-by-step guide for the do-it-yourselfer)

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The promise of home automation has been with us for many years and you can see it on a small scale in many forms. The washboards, ‘ice boxes’ and wood stoves of yesterday have become the automatic washing machines, refrigerators and HVAC systems of today. The modern home is a living tribute to the advancement of technology in the areas of lighting, appliances, security, heating/cooling and home theater. However, integration of these systems has always been the missing link. The goal of a good home automation system is to achieve this integration and offer centralized control for your entire home!

With that goal in mind, it’s time to face some facts. With all the home automation technologies available from scores of manufacturers, picking out a home automation system can be a daunting and bewildering experience. For many homeowners, this is a job best left to the professionals. However, with a little careful research and planning, this is also a job for the adventurous homeowner! Use the following step-by-step guide to help map out your automation strategy and avoid some common mistakes.

STEP #1 – Forget everything you know about home automation!

Or at least, put your knowledge aside for the moment. For some, this may be the single most difficult step but it is absolutely essential. Why? Because the biggest mistakes often occur when important decisions are made in the wrong order or for the wrong reasons. With home automation, as with many other areas, a little bit of knowledge can be a very dangerous thing. So clear your mind of any pre-conceptions first. Put aside any thoughts you may have about what technologies you want to use or what products you want to buy. There will be plenty of time for that after you’ve done some basic homework and planned the foundation for your system.

STEP #2 - Spend a little time in your favorite room.

That’s right. Find your favorite room and take a seat. Get comfortable. Take a few minutes to look around and reacquaint yourself with your surroundings. Now grab a pencil and paper and ask yourself this question: “What do I want to automate?” If you’re in the family room, you might want to automate the lighting, the shades, your stereo system or home theatre gear. In other rooms, it might be the phone system, security system, sprinklers, garage doors, etc. Jot it all down and repeat this step for all the ‘less favorite’ rooms (and systems) in your house. This will be your automation list.

STEP #3 – Put on your thinking cap.

It’s time to get creative! Now that you have you automation list, you know WHAT you want to control. It’s time to decide HOW to control it. For simplicity, let’s refer to these HOW methods as control “triggers”. Now, let consider some triggering possibilities for a common light switch:

- Trigger #1 – manual. You flip the switch on (or off) with your finger!
- Trigger #2 – absolute time. The switch turns on (or off) at a certain time of day.
- Trigger #3 – sunrise / sunset. The switch turns on (or off) at sunrise or sunset (or at a time relative to sunrise or sunset)
• Trigger #4 – **changes occur in your home** – The switch turns on (or off) when motion is sensed or a security system alert occurs or when the door bell rings, etc.
• Trigger #5 – **voice recognition** – The switch turns on (or off) when you speak a command.
• Trigger #6 – **phone** – The switch turns on (or off) when you phone home and issue voice or touch tone commands.
• Trigger #7 – **conditional** – The switch turns on (or off) 30 minutes after sunset when motion is sensed and your thermostat is above 68 degrees!

Are there more triggers? Sure! The possibilities are vast. Use your imagination and list all the triggers you want for everything on your automation list.

**STEP #4 – Choose your “controller” (most important step)**

Once you’ve determined your needs, you’ll need to choose the central automation controller for your home. The automation controller is the “nervous system” for your home as it will communicate with all your automated devices and user interfaces. It also contains the logic necessary to automate controlling your home.

**Software controllers:** Whether your needs are complex or simple, if your budget is tight, you might consider a software-based control solution. Software controllers are designed to run on your own computer (24/7) and offer the least expensive path to home automation. These systems are typically very powerful and flexible and some even include scripting and ‘plug-in’ support to work with new technologies and devices as they become available. If you go this route, plan on using a dedicated personal computer for better reliability. [Click here for an online listing of HomeSeer's software control systems](#)

**Hybrid “Gateway” controller:** Gateway controllers are hardware-based appliances that offer the same level of power and control as the software controllers but with a higher level of reliability. The best of these are designed with embedded software, include no moving parts and can support advanced functions such as voice recognition, text-to-speech processing and remote access. [Click here for an online listing of HomeSeer's gateway control systems](#)

**STEP #5 – Pick your control technologies.**

Sadly, this step is often taken long before a clear understanding of the system is developed. Those who make this mistake usually end up wasting a lot of time and money. **Remember:** it’s much easier to choose technologies that fit your needs than it is to adjust your needs to fit your technology choices! As you review the options below, choose the technologies that best fit your needs and add them to your automation list.

**Here are some common automation control technologies to consider:**

**Wireless** – Control signals are sent via radio frequency transmissions.
Typical application: Lighting, appliances, thermostats, Sensors
**PROs:** These systems are significantly less expensive than hard-wired systems and wall switches and lamp modules are generally very easy to install. Reliability is very close to that of hard-wired systems.
**CONs:** Care must be taken to install enough devices for adequate communications. [Click here for an online listing of Z-Wave wireless products](#)
Powerline — Control signals are transmitted through the existing power lines of the home. Typical application: Lighting, appliances, HVAC, Motion sensors
PROs: These systems are significantly less expensive than hard-wired systems and wall switches and lamp modules are generally very easy to install.
CONs: Power line conditions in the home can fluctuate significantly and affect performance and reliability.
Powerline technologies include (but are not limited to): X10, Insteon, UPB

Hard-wired – Wires (typically CAT5 or similar cables) are run from a sub-system controller to each device.
Typical application: Lighting
PROs: These systems are very reliable and offer lightning-fast response.
CONs: The devices and system controllers are often very expensive. Installation into existing homes can also be very expensive.
Hard-wired lighting systems are available from Lutron and Centralite (and others)

Serial (RS232, RS485) – Control signals are transmitted through serial cables.
Typical application: Security, HVAC, Digital I/O (including sensors - temp, humidity, light)
PROs: serial communications are very reliable and are used extensively in the security and HVAC industries.
CONs: RS-232 serial cable runs typically cannot exceed 50 feet and installation into existing homes can also be very expensive or difficult to do.

Ethernet (Wired/Wireless Network) – Control signals are transmitted through network wiring.
Typical application: Security, Digital I/O (including sensors), Infrared, Cameras
PROs: Network communications are very fast and very reliable and are used extensively in the I.T. industry. Networked devices can sometimes be located outside the local network and used in remote locations.
CONs: Installation into existing homes can be expensive if wireless network technologies cannot be used. There are very few devices available with a network interface.

Infrared (IR) – Control signals are sent via infrared (IR) transmissions.
Typical application: Home Entertainment Equipment, Shade/Blind controllers
PROs: IR control allows easy control of most TVs, DVD players and audio systems.
CONs: IR signals are only reliable for 'line of sight' transmissions. Extending range for these devices requires additional equipment with added complexity and expense.
Click here for an online listing of IR Controllers

**NOTE:** Depending on your needs, you may need to mix multiple control technologies. If the controller you’ve chosen (in step #4) doesn’t allow enough flexibility to support all the technologies you require, you may need to backtrack and reconsider that choice.

**STEP #6 – Dip your toes in the water.**
At this point, you should have a really good handle on what you’re doing but before you take the final plunge; it’s time to get your feet wet first. You wouldn’t buy a car without taking it for a test spin, right? Same rules apply here. Remember, you’ll be living with this system for many years so you need to be sure you’ll be happy with it. Many companies offer home automation starter kits and most software companies offer free ‘trial’ versions of their controller software. That’s the great place to start. If you have friends or neighbors with systems, their insight can be very helpful too.
STEP #7 – Take the plunge!
If you’ve made it this far, congratulations! Your automation list should now include WHAT you want to automate, HOW you want to control it and WHICH controller and technologies are best suited for your choices. All that’s left is to purchase your gear and install it.

Where to buy?  It would be nice if home automation equipment were readily available at the local hardware store or warehouse chain. Sorry… you won’t find it there yet! Instead, you’ll likely need to hit the web for home automation dealers or distributors. As you sift through the choices, don’t be afraid to ask questions. Can the dealer or distributor support you if you run into problems or will they refer you back to the manufacturer? Will they stand behind their gear and offer prompt replacements for defective items? Factor these answers into your buying decisions and remember… The lowest price is not always the ‘best deal’!

Installation?  HomeSeer systems are designed to be installed by the average home owner. However, depending on your skills and the local building codes, you may or may not be able to complete the installation alone. Be sure to check out homeowner rights and restrictions with your local authorities before beginning your work. If you must involve 3rd party help, try to find contractors with experience in home automation.

STEP #8 – Have Fun!
A really interesting change occurs when home automation is installed. You begin to treat your home as one big unified system instead of a collection of smaller unrelated systems. When this happens, the possibilities and “what if’s” start to surface. This is where the fun begins:

- What if my home could call or email me when my son comes home from school?
- What if my TV or audio system could automatically mute every time the doorbell chimes or telephone rings?
- What if my home could remind me to take my medicine or pick my daughter up from art class?
- What if the house lights turned on a little earlier than normal on cloudy days?
- What if callers were announced by name when the phone rings?
- What if a smoke detector could automatically shut down my HVAC system and alert me on my work computer or cell phone?
- What if the sprinklers didn’t run on rainy days?
- What if the alarm system was disarmed, lights turned on, thermostat turned up and my favorite music began to play as soon as I pulled into the driveway?

With the right system, all of this (and much more) is possible! Enjoy….. 😊

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