



# The Smart Home People™

[www.trivista.ca](http://www.trivista.ca)

## Why TriVista?

Anyone can pull cables and install audio or TV sets. Few can deliver a true **smart home**. What's different about TriVista?

- Process** We plan, document, and price your solution before we start. We take the mystery out so you know exactly what you'll be getting. We employ a formal, structured project installation and deployment process whereby all stages of the project are clearly defined, inspected, and validated during planning, installation, and commissioning.
- Value** We will select the best technology to fit your budget. We are not locked into high-end, costly solutions.
- Time** It takes a substantial investment of time to make a smart home suit the lifestyle of the family. We invest this time. We take the time to understand your lifestyle, listen to your needs and concerns, then program your home to meet your expectations, exactly as you expect it would.

## Not Just About Price

When you buy a smart home system, you're not buying an inanimate object, but a **Project**. A project that typically consists of:

- **Equipment**. 50+ different pieces of equipment and components from 20+ different manufacturers
- **Wiring**. An underlying structured wiring system that the system relies upon.
- **Skills**. Many hours of skilled planning, installation, and programming services time

It's quite different from buying a car tire for instance. The tire never changes – the best place to buy it is wherever you can get the best price for it. With a tire, it's all about the price – the tire never changes. A Smart Home system however is *very* different. If you seek a smart home solution from 5 different suppliers, you'll get five different proposals with five different prices, and ultimately five different levels of results. Why? Because unlike a car tire, a project has many **variables** that can affect the outcome of the project.

- Equipment** Was the proposed equipment suitable for the requirements? Is it fast enough? All home automation systems have a capacity that must be carefully calculated and monitored so the system will perform well.
- Integration** Will the various pieces interconnect and integrate together? Some products simply do not work with each other. Will this camera have a suitable software driver for Crestron or Control4? Is Product A compatible with Product B? Will your Apple mobile devices work well with the system?
- Services** Have sufficient services been allocated? It takes time to do projects properly. Has the supplier allocated enough services time to complete the work properly? How much time will it take to program all components for proper operation? If corners are cut, you will see unpleasant surprises later into the project, such as unexpected cost increases or reduced performance.
- Performance** Will performance meet expectations? Is this camera image going to reveal facial details you expected? Will the in-wall audio sound as good as the bookshelf speakers you're used to? Will you be able to view 3D movies or play copy-protected audio and movies? Will high-definition video be as good as that \$10,000 TV you saw? Will the surround sound be as good as you expected?
- Wiring** Has the wiring been installed that will support the present and future requirements? Will the wiring support the latest copy protection? What if an HDMI cable version is upgraded?
- Usability** How easy is the system to learn, for all family members? Will it be simple for us and our visitors to operate? Many users are intimidated by tiny screens, deep menus, passwords, and technical terminology.
- Maintainability** How do we make changes to the system without costly service calls? How do we keep the system up to date with all the newest releases? Will this cost us any money?

Unlike that car tire, the lowest price more than likely means the worst possible outcome for your project. The best outcome will result from the supplier that has the best knowledge, skills, and experience to deliver a proposal that is well designed with proven equipment, is based on a well-designed wiring plan, reflects your requirements as well as your budget, and contains sufficient services to ensure a successful outcome that you'll be happy with.

## Process

No two smart homes are the same, so how do you know yours will be simple to use, and will meet your expectations? Making your home a smart home is not just a matter of installing equipment and leaving. It's a mix of careful planning, integration of new and existing systems, delivering a wiring infrastructure platform, installing appropriate control equipment, and programming the system so the home's behavior meets your particular needs. TriVista has a carefully structured installation, delivery, and commissioning process we follow for every project, to ensure your home behaves exactly as you want. This process is in writing and is carefully tracked during all of our projects. No project phase is started until the prior stage has been confirmed to have been completed correctly. We rigorously follow the following prescriptive process to ensure successful project completion:



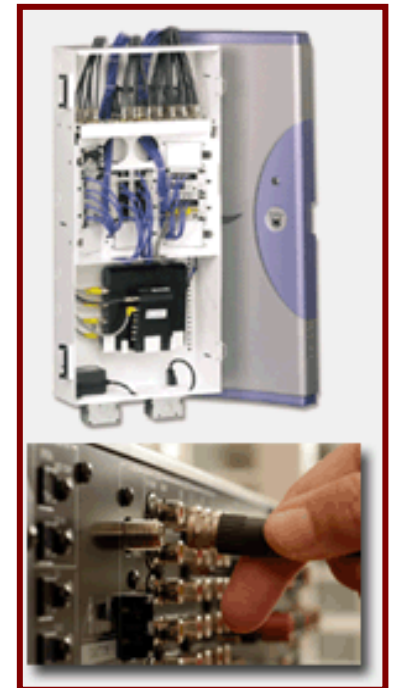
There are seven stages to a TriVista Smart Home Project;

1. Proposal
2. Design
3. Wiring
4. Installation
5. Programming
6. Testing/Finalization
7. Commissioning

### Proposal

We take great care to ensure you know what you are getting, what it will do, and what it will cost. We'll show you examples of smart home capability in our showroom or customer sites. We put all our proposals in writing. We also enter into a detailed 14-page contract that covers all aspects of your project, from installation through to warranty and commissioning.

- Meet to review requirements, expectations, budgets
- Assess any existing A/V equipment for suitable integration in the new system
- Demonstrate core equipment to facilitate equipment selection, including styles and colours, etc.
- Facilitate customer site visits
- Draft a project proposal and review/revise until you are 100% comfortable with solution and budget
- Research equipment and components required for integration
- Get updated pricing from manufacturers
- Complete a preliminary system design that specifies all required components and interconnection



**Design** We work with you and your contractors to ensure all integration points are identified, and all contractors are aware of what they need to do. Everything is clearly specified on official drawings.

- Research equipment and components required for integration
- Select suitable products and confirm interconnection compatibility. Will Product X work well with product Y?
- Select suitable security devices for the home, given the windows, doors, room configuration
- Propose a base automation control system capable of controlling and integrating with all home systems
- Evaluate heating/cooling system to determine thermostat compatibility and control
- Conduct a complete lighting system control plan

- Identify areas of switch consolidation. Recommend suitable locations and applications for multi-button keypads to replace individual switches.
- Select dimmers, switches, 3-ways and outlet switches for lighting control in various rooms
- Evaluate light fixture electrical load, specify high-wattage where needed
- Select suitable controller

**Wiring** We will install a comprehensive wiring infrastructure to support your smart home. We incorporate as much future-proofing as possible. Our wiring is **TriVista Smart-Certified**, meaning it meets our high standards for quality. Where a third party installs the wiring, TriVista conducts a formal inspection, and supplies a deficiency report for correction. We can even certify third-party wiring.

- Design a suitable wiring plan that supports all the proposed equipment and interconnection
- Alter electrical drawings to account for light switch consolidation, and add needed electrical outlets for equipment.
- Estimate HDTV run distances on drawings and specify Cat6e and baluns where distance exceeds 50 feet.
- Assess lighting fixtures and calculate total load requirements for dimmers (max 1000W per load). Identify ELV fixtures and CFL loads and specify appropriate matching dimmer types
- Install all cables in accordance with electrical runs and access paths
- Record physical cabling table in Excel Spreadsheet
- Mark all cables during installation
- Label all cables following construction completion
- Terminate and jack all cables following construction
- Interconnect services (Bell/Rogers, phone, Internet) to equipment location
- Change cable mounting where spray-foam insulation is used
- Install LV junction boxes, speaker brackets, speaker backboxes, touchscreen backboxes, etc. where needed
- Inspect wiring before insulation/Drywall
- Install vapour barriers behind in-wall speakers
- Photograph all strategic wiring locations
- Interconnect smoke detectors with security and control systems

**Installation** We install all the control equipment and integrate the various systems and components, using any applicable wiring infrastructure.

- Working with customer, establish on-wall locations for all on-wall equipment (speakers, touchscreens, volume controls, etc.). Diagram and mark.
- Install mounting brackets for speakers, cameras, etc.
- Install TVs with mounting brackets
- Install all security devices such as motion sensors, door/window contacts, glass breaks
- Install all on-wall devices and equipment such as touchscreens, speakers, etc.
- Install all equipment in rack such as amps, controllers, baluns, receivers, etc.
- Connect all equipment to wire runs at rack
- Install patch cables between all equipment in rack
- Test and confirm all interconnections are working
- Install LAN routers, switches, etc. and confirm underlying LAN is working properly
- Connect all powered in-wall devices to electrical power
- Connect and test all electromechanical interconnections such as fireplaces, garage doors, swimming pools, motorized blinds, etc.
- Install all lighting dimmers and confirm proper operation
- Test and confirm that all equipment is working as required.
- Test and confirm all security devices are working properly and monitoring codes are transmitted properly for all possible triggering events
- Install all mobile device applications
- Test all in-wall devices including speakers, TVs, volume controls, touchscreens

**Programming** Here we program the “rules of behavior” and overall operation of the home, so the home operates according to your wishes. When would you like the heat to come on the mornings, and at what level? What lights/levels for various lighting scenes? What temperature should trigger an alert? When/how to turn lights on/off? What music playlists to present onscreen? Who gets notified, and when/how in the event of alerts or emergencies?

- Work with customer to define and document all system behaviours including:

- Scenes (Away, Welcome home, etc.)
- Alarm system. User accounts and passwords, triggering events and reactions, etc.
- Temperature schedule and settings
- A/V scenes such as Watch TV, Watch Movie, Party, etc.
- Home settings for at-home and away scenarios
- External lighting
- Simulated occupancy
- Name all devices, rooms, scenes
- Configure custom Control4/Crestron menu options to suit project
- Upgrade all device software and firmware to current release levels
- Program all core scenes common to all homes (Away, Welcome Home, ALL ON, All OFF, etc.)
- Program custom scenes according to customer requirements
- Program A/V equipment integration including all remote control codes, ON, OFF, Channel select, etc.

### Testing/Finalization

In this stage we confirm everything works the way it is supposed to work. All the various interconnected components must work together seamlessly.

- Test all A/V devices for full daily operations including ON/OFF, WATCH, Volume, Pause, Mode/Input Switch, etc.
- Confirm all Apple or mobile devices are working properly
- Performance test of LAN. Confirm speed and performance suitable for media streaming. Distance test wireless LAN operation.
- Test all lighting device operation, scenes, A/V equipment, media streaming, electromechanical devices and all other behaviours work according to design
- Modify programming as required

### Commissioning

This is where the home becomes operational as a smart home. We test all aspects of the system to ensure correct and appropriate operation, and that it behaves as it was programmed. We then train your family on system operation, entry/exit, monitoring, etc.

- TriVista inspection of entire system and all behaviours:
  - Correct installation and interconnection
  - Confirm all on-wall devices are level
  - Wiring terminations and patches are neat and secure
  - No electrical loads are exceeded
- Train homeowners on operation of all aspects of system, including:
  - Security (where installed)
  - Using remotes and mobile devices
  - All scenes and behaviours
  - Menu customization
  - Media selection and streaming
  - Media ripping and transfer (audio/video)
- Review/train on system capabilities
- Train on how to use Control4 Composer Home Edition to (safely) make changes to the system

### Certification



“We deliver quality products and good service”. Everyone says it, TriVista **proves** it. TriVista has pioneered the industry’s first formal Certification Program for smart homes – The **TriVista Smart-Certified** program. Certification means that a smart home system, or the entire smart home, has been certified by TriVista to meet its high standard for quality and performance.

Consider this true story. A homeowner enjoys watching a high-definition movie played from his Blu-Ray player. From time to time the picture quality mysteriously degrades to low-definition at random times, for no apparent reason. Everything appears to work properly, nothing seems to explain it. The cause? Signal degradation occurs whenever the washing machine is turned on.

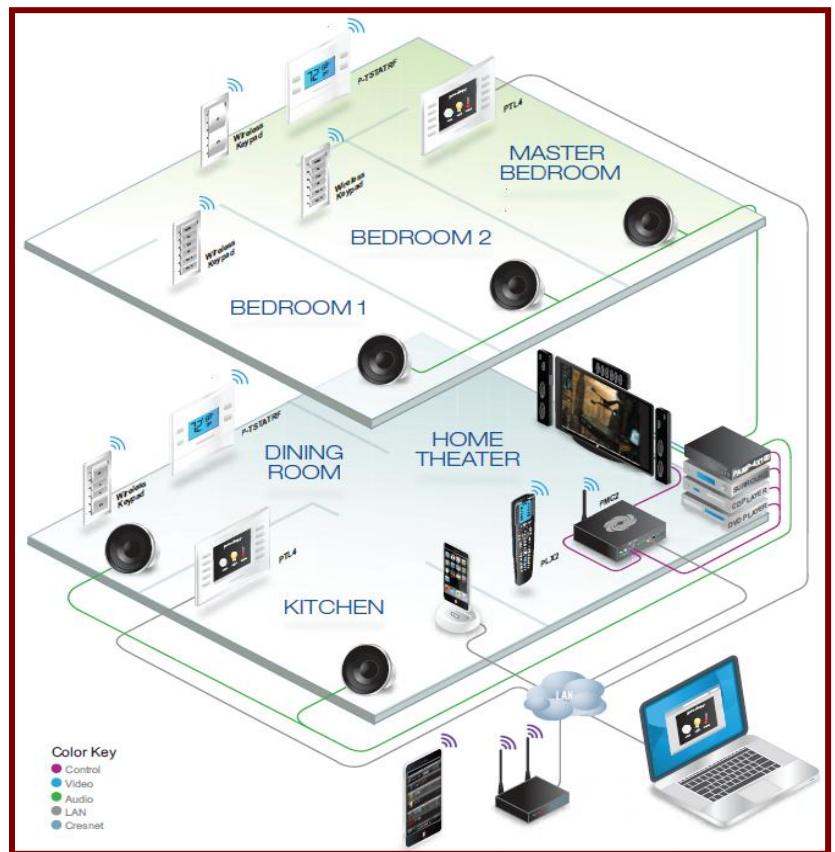
When the home was constructed, the HDTV cable was improperly run too close to the electrical cable powering the washing machine. How do you avoid this? With TriVista Smart Certified installation. We individually certify the following systems, which together form an entire smart home:

- **Interconnection infrastructure.** Includes structured wiring, wireless LAN
- **Safety and Security.** Includes alarm systems, video surveillance, hazard detection
- **Automation Controls.** Includes all aspects of automation controls and programming.
- **Multi-room Audio**
- **HDTV Distribution**
- **Home Theatre**
- **Lighting**

**TriVista Smart Certified** means:

- System passes 100% of all specified operational and performance items in TriVista's written TSC checklist
- Measurements have been performed to prove performance where possible
- All critical aspects of operation have been tested and proven to work in accordance with industry norms and TriVista's exacting TSC specifications.

TriVista certifies all of its installations, so you can be assured of high quality, correct operation, and high performance. We also inspect, retrofit, and certify systems installed by other parties. All too often, we carry out "rescue projects" on incomplete or substandard installations.



## Rough-In Wiring

"My electrician can pull wires through my home for less cost than TriVista". Perhaps – but here are the reasons why you should use TriVista to pre-wire your home. Wiring infrastructure needs to be carefully planned and carefully installed in order to serve you well for the entire lifetime of the home:

### Design-based wiring

All TriVista wiring is based on a comprehensive design that takes into account the planned equipment that will be used on the wires, and how they will be used. Are cable TV boxes and DVD players to be shared among multiple TV sets? Is the TV high-definition? Could cameras or iPods be used on this cable? What is the maximum allowable length for the intended usage? For example, a remote temperature sensor will require a particularly heavy cable to report accurately.

### Future-Proofing

What will we need once the children are older? Will we ever sell this home? What if I finish the basement or put in a swimming pool in the future? How is the internet likely to be used? We future-proof the home by planning wire runs and special cable types that may not be used today, but are there for future use, or in the event the home is put up for sale.

### Audio/Video Requirements

Today's modern A/V equipment has special requirements, particularly HDMI cable for high-definition TV. Our wire choices and methods are based on the requirements of the intended A/V equipment. Some cable types and qualities affect picture colour or brightness. Different signal types, such as Component and HDMI, have specific distance and cable type requirements. Will HDCP (copy protection) run properly on these wires? When to use Cat5e versus Cat6e internet? How does sound fidelity degrade based on cable type? We often even change the cable type based on the length of a given run.

### Proper Handling

We understand that the cables have to be properly handled. We respect maximum allowable bend radiiuses, and we discard pinched or twisted wire. We never splice.

### Proper placement

Placement affects the performance of the cable. We stay away from electrical sources, and run at proper angles to electrical. We stay 2 inches behind studs, and use vapour boots for audio terminations.

### Labelling

We use high-quality permanent plastic labelling on all cables, and present you with a *Wire Management Table* in electronic form upon completion.

### Cable Quality

We use only high-quality, FT4 fire-rated cable. We match the cable type with its intended target usage. The more sensitive the intended usage, the higher quality the cable we select.

### Conduit

Some cables, particularly HDMI, have a very high likelihood of replacement in the future as technology evolves. We identify these cases and run conduit for easy future replacement.

### Certification

TriVista will test and certify, in writing, that the cables are intact and operational before and after drywall installation. We will identify any post-drywall breaks and damage (TriVista is not responsible for wires damaged following installation).

## Integration

Can I make my home a smart home without running wires? Can I control my 20-year old pool equipment from my cell phone? Can I play music from my old stereo? Can I see the picture from my front door camera on my bedroom TV? Can I use my existing security system? Can I share my Rogers Cable TV among all the bedroom TVs? Can I use my new Apple iPhone to control my home? Can I play music and movies stored on my computer? Can my home lower the blinds when I'm not there?

A truly smart home puts you in full control of your home's heating/cooling, lighting, security, audio, and video entertainment systems, and more. TriVista has the knowledge, skill, and experience to understand these systems and integrate automation technology with these systems to control them seamlessly. We understand the differences between gas-fired furnaces, hydronic radiant floor heating, boilers, solar heating, geothermal, and other heating/cooling systems. Low-voltage centralizing lighting versus wireless lighting control. High-Definition TV signal distribution. Salt-water pool chlorination. Proximity lighting control. HDTV copy protection protocols. We keep up with all the latest trends and standards with household systems, as well as provincial building codes.

TriVista involves a certified electrician with every project to ensure all lighting loads are safely and effectively handled, and all systems meet safety codes and interoperate properly. We work closely with your HVAC, electrical, construction, Audio/Video, and other contractors to make sure everything integrates seamlessly. TriVista employs an average of 25-50 different products and technologies per project to achieve seamless integration, so you can use simple single-button commands to control your temperature, lighting, and entertainment. We deliver strong integration so you never have to worry about the details of any particular system.

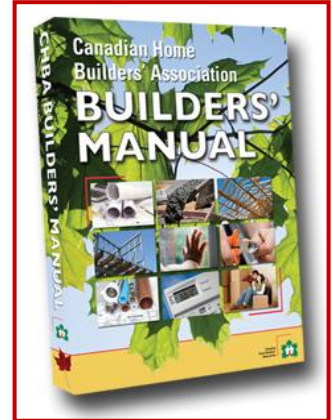
## Protection

There are thousands of alarm system installers in Canada. TriVista is not like them. We're serious about **safety**. We provide **Smart Security**, a whole new level of protection for your family and your home. We provide not just monitoring service like everyone else, but *self-monitoring* homes, particularly useful for rural locations. When danger presents itself, we take extraordinary measures to aggressively protect your property and family. In the event of a nighttime emergency your home can automatically wake everyone up, turn on all the lights, alert the neighbours, flash outside lights, and call for help. It can even shut off the furnace fan to prevent the spread of smoke. We can monitor the swimming pool and alert if anyone is in the pool when nobody should be there. You can receive alerts on your cellphone when the kids break curfew. Monitor your children's TV watching. Enforce gaming and homework time limits. Monitor caregivers. See who is at the front door before answering. A TriVista smart home can automatically notify you whenever your home needs your attention, such as a temperature drop, water on the floor, a door left open, etc. Have you ever returned home to realize you left your garage door open? A TriVista smart home can close that door automatically. We deliver serious personal and property **safety**.



## Construction

TriVista works closely with architects, designers, and trade contractors to make your project go smoothly. Our construction-oriented project delivery contract reflects the challenges that can arise from the construction process. We use formal project management to schedule installation and resources appropriately. Our team understands the construction process and the many integration points among the different contractors. We understand that cooperation between contractors is paramount to a successful installation. TriVista authored chapter 23, "Home Automation", of the 2009 **Canadian Home Builder's Association's Builders' Manual**.



## Value

The days of carefree spending are long gone. Competition is ferocious. No matter how modest or ambitious the project, everyone has a budget limit. TriVista respects your budget, and will work within it. TriVista pioneered our well-known \$1,999 [Smart Home package](#), which we continue to offer after 2 years. We offer a range of products at price points to fit any budget. We are not an exclusive luxury provider. We carefully select our equipment for quality and value. We avoid low-cost equipment that does not meet our high standard for reliability and performance. We include all labour and ancillary devices in our proposals so there are no surprises. We put everything in writing and back it with a strong contract. Whether a small condo or a 10,000 square foot estate, TriVista is committed to value in every project.

## Customer Care

Our customer care begins even before we begin installation. We work with you to select equipment and trim that not only works well, but looks good with your home decor. We consult you and your family on mounting locations, background brightness, size of screen font, status light colours and function, and other aspects that make a big difference between just installing, and making it work well for you. We honour manufacturers warranty on equipment we sell and install. We have an after-hours service program, and we can be reached 24/7 in the event of an emergency.



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