

# Trend: THE FUTURE HOME IS AUTOMATED

Ever since Joseph Henry pioneered the electric doorbell in 1831, we have had a passion for home automation. But today's automation technology extends far beyond the doorbell. Recent market research indicates that nearly 20 percent of homeowners use at least one automated home feature, and 60 percent are interested in owning a home with greater automation. Business Insider and Forbes predict that home automation<sup>23</sup> will soon become a \$1.7 trillion market.

Similarly, automation is revolutionizing the home construction process. With a shortage of workers looming over the housing market, automated tools that can take the place of workers or reduce the number of workers necessary are more important than ever. From drones and security systems that automatically monitor job sites to robots that can lay bricks or create house frames complete with windows, plumbing, insulation and electricity rapidly within a factory, robots and automation are changing the way we build homes.

## Energy and Security

Imagine if no father ever had to say again, "Shut the lights off! Do you think we're made of money?" Home automation can go a significant way towards paying for itself in terms of better managing resources. Lighting systems utilize sensors and turn lights off when no one is in the room. Smart thermostats can lower energy consumption when no one is home or dwellers are sleeping. Water systems can shut down those half-hour teenage showers, shut off the sprinklers when it rains and find leaks and problems that drive energy and water bills up.

Home automation for safety and security have also come up a notch. Smoke detectors are enhanced with radon gas and carbon monoxide detectors. And electronic systems can remember that the housekeeper comes at 4PM on Tuesdays and relay a video from the front door to a smart phone so adults can decide whether to let her in. What's more, when the kids come home from school parents get a video text that not only assures them the kids are home safe, but also, confirms that the pesky boyfriend didn't come along too. These sensors can even tell caregivers that their aging parent didn't turn on the light in the kitchen or bathroom today and send a text alert asking for help. This personalization moves home automation outside of the notion of gimmick or even convenience to the realm of reassuring dwellers that all is well when they are away.

Zions Security



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"Smart home technology allows a home to take a different position than just being an inanimate object—it creates an emotional relationship. Before you had a door lock. Now you know that your kids are home safe when you're not there. The promise is the personalization."

– CR Herro, Vice President of Environmental Affairs, Meritage Homes<sup>24</sup>

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## The 'Fault with Default'

When discussing connected devices, security and privacy are of primary concern. One of the biggest challenges in any 'smart home' is the lack of education most homeowners have around the settings of their devices. IoT devices come with default privacy and security settings which tend to be focused on simplicity for the homeowner as opposed to safety. Home implementers will need to communicate security and privacy by offering insights around managing settings.



## Tying it all Together

As technology improves and prices for components drop, home automation has moved beyond the luxury home to middle of the road housing. But not all home automation systems work together. And what's more, it's not entirely clear which system will win out. Many systems are tied together via simple WiFi and Bluetooth and are accessible via computer, smart phone and tablet. However, other systems such as Zig bee and Z-wave, Insteon, UPB, Thread and Apple Home Kit are less ubiquitous. Thankfully, some companies have stepped to the front, developing convenient and economical all-in-one home automation kits for home construction companies. What's more, companies are upping their "techorating" game offering wireless/ no cables lighting and audio which improve the automation in the house without requiring expensive or ugly wiring setups.

## Robots in Home Construction

A recent survey by the Associated General Contractors of America found that up to 70 percent of construction crews are challenged to find skilled workers including framers, bricklayers and carpenters. This shortage, which has been worsening since the recent housing crash, had also driven a rise in housing costs. Construction companies have begun to put greater reliance on prefab printing and building as well as robotic construction to fill the gap.



Construction Robotics

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"We're at a tipping point where it's finally just gotten too expensive to build the old-fashioned way."

– Margaret Whelan, CEO of Whelan Advisory and an investment banker for the home building industry<sup>25</sup>

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Construction companies are looking to new techniques not only to manage the talent shortage and cut costs, but also, to finish desperately needed affordable housing more quickly than ever before. Prefab companies create trusses or large segments of house framing complete with windows, plumbing, electrical wiring and insulation in chiseled large panels in a single day. And unlike prefab homes in the past which were built on a limited number of models, modern factory plants can churn out flat panels to any blueprint the builder requires. This process can cut the time required to build a home by as much as 50 percent.<sup>26</sup>

Along with prefab construction, other automated tools are coming on line. Construction Robotics has developed SAM (short for Semi-Automated Mason)<sup>27</sup> to do robotic bricklaying. This process can lay 2,000 to 3,000 bricks in an 8-hour day (compared to 400-600 for a human mason). Construction Robotics has also introduced MULE, a Material Unit Lift Enhancer which makes it easier for construction workers to lift heavy objects (up to 135 pounds) such as cement blocks on the job site. Companies like ICON are using 3D printing robots that can print the walls, roof and floor of a 650-foot house in as little as 12 hours.<sup>28</sup> Robots are also being used to prepare job sites—allowing bulldozers, excavators and other vehicles to operate autonomously.

Even job site supervision is moving towards automation. Cameras, particularly mounted on drones are used to survey job sites to measure materials. Projects that once required a contractor an entire day with a truck mounted laser can now be completed in 25 minutes utilizing a smart drone. Drones are also being used to help keep job sites secure.