The Future Home

Should Start With the Human, Then the Lot.

AI, smart design, modern methods of construction and community thinking for more affordable, safer and more adaptable housing



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Building Tomorrow, Today.

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Foreword: The House That Loved Me Back

Before the Future Home became a housing idea, it was a much more personal one. In The House That Loved Me Back, the question was never whether a home could contain more technology. It was whether technology could become useful enough, quiet enough and human enough that the house itself seemed to care.

A light comes on before someone reaches a dark hallway. A door confirms that it is locked. The temperature adjusts before discomfort becomes a problem. A routine takes several small things off the mental load of a busy parent. A senior can remain independent without feeling watched. A caregiver can receive the right signal when something has changed, rather than a stream of meaningless data.

That book grew out of the SheSmartTech series, where we explored smart-home technology through people, routines, caregiving, safety, privacy and everyday life. The technology mattered, but only because the person mattered first. The best automation was often the one you stopped noticing because it simply made the day easier.

The Future Home takes that same idea and moves it upstream. What happens if we apply the same human-first thinking before the home is built? What if persona, routine, accessibility, social connection and care become design inputs alongside zoning, structure, energy, construction method and cost? What if the intelligence of the home begins in planning and continues through construction, occupancy and operation?

That changes the role of technology. AI is no longer a gadget inside a finished house. It becomes part of the decision system that helps us compare building forms, materials, construction methods, energy choices, care needs and lifecycle costs. Digital infrastructure is no longer an add-on. It becomes the connective tissue between the resident, the building, the community and the organizations responsible for keeping all of it working.

There is an important caution inside that vision. A home that knows more about us can also become a home that knows too much. Human agency, privacy, security and AI literacy therefore have to grow alongside capability. People need to understand what their home is doing, what information it is using, what decisions are automated and how to take control when they want to.

The promise is not a house that thinks instead of us. It is a house, and eventually a community, designed well enough to support us. The House That Loved Me Back imagined what that could feel like from the inside. This article asks what it would take to build that idea into housing from the beginning.

The Future Home Should Start With the Human, Then the Lot

The Future Home should not begin with a catalogue, a construction system or even a piece of land. It should begin with the person who is going to live there.

That sounds almost too obvious to call innovation. Yet much of housing is still produced in the opposite order. We acquire land, determine what zoning permits, maximize the number of units that can be financed, choose a building form, design the building and eventually ask people to make their lives fit inside it.

What if we reversed that? Start with human need. Understand the household persona, the life scenario and the social-care objective. Add the land, climate, infrastructure and economics. Only then decide what should be built.

A young family with three children needs something different from a 78-year-old woman living alone. A newcomer family living with grandparents needs something different from a single person working from home. Someone using a wheelchair needs more than a larger bathroom. A parent working a night shift may care about lighting, sound, childcare and security in ways a conventional floor plan never captures.

Canada's own household data makes the weakness in the one-size-fits-all model fairly obvious. In the 2021 Census, 29.3 per cent of Canadian households contained one person. Couples without children represented 25.6 per cent, couples with children 25.3 per cent, one-parent households 8.7 per cent and multigenerational households 2.9 per cent. We do not have one housing market. We have millions of different life scenarios that happen to be grouped under the word housing.

The Future Home should begin there.

What if AI could ask a better first question?

Instead of asking an architect to begin by drawing units, imagine giving an AI-enabled housing system two sets of information. One describes the people: household types, ages, accessibility requirements, likely changes over time, affordability thresholds, transportation needs, work patterns, childcare needs, care requirements and social objectives. The other describes the place: lot dimensions, topography, zoning, servicing, solar orientation, climate, transit, schools, healthcare, employment, fire access, construction labour, available materials and infrastructure.

Now ask: What is the best community we can create here for the people who need to live in it?

That is a radically different optimization problem. The system might discover that 30 detached houses are not the best answer. Perhaps the site works better with some detached homes, duplexes and townhouses, a four-storey building for seniors, accessible apartments, family-sized units, childcare, gardens and shared space.

Density becomes a variable rather than an ideology. We can ask what density produces the best balance between affordability, land efficiency, privacy, social connection, services, mobility and quality of life. Then we can run scenarios: what happens to cost per home if we add another floor, whether children can reach play space safely, whether an ambulance can reach every unit quickly, how many residents can walk to transit, and

what the operating costs look like over 30 years.

AI is well suited to questions like these because they involve thousands of variables and trade-offs that no individual professional can reasonably process at once. As agentic AI develops, specialized agents could test construction systems, materials, energy performance, procurement options and lifecycle cost against the same human objectives, while architects, planners, engineers, contractors and social-care professionals retain judgement and accountability.

That is human-machine collaboration applied to housing. It also makes AI literacy essential. If residents, builders, housing operators and municipalities are going to live and work with AI-based routines, they need to understand what the systems are doing, when to trust them, when to challenge them and how to remain in control. AI literacy becomes part of housing literacy, just as energy literacy and basic home maintenance already are.

The cheapest house is not necessarily the least expensive house

Housing affordability is usually discussed in terms of construction cost or monthly rent or mortgage. That is too narrow. The Future Home should calculate lifetime cost.

A wall assembly that costs $4,000 more during construction but substantially reduces heating and cooling costs may be the cheaper wall over its life. Better ventilation may cost more than minimum code but reduce moisture, mould and respiratory risk. A wider door or reinforced bathroom wall installed during construction may cost very little compared with retrofitting accessibility later.

The World Health Organization is unusually direct about the consequences. It says improved housing can save lives, prevent disease, increase quality of life, reduce poverty and help mitigate climate change. Its housing guidelines connect poor housing with excessive heat and cold, crowding, injury, inadequate accessibility, air-quality problems, dampness and mould.

That turns housing performance into an ROI calculation. The return does not appear only on the developer's pro forma. It can appear in a resident's energy bill, a hospital budget, home-care costs, insurance claims, maintenance spending and the number of years someone can remain independently housed.

An R-value, therefore, is not simply a building specification. A better thermal envelope can mean a warmer bedroom for someone who cannot afford a high heating bill. WHO notes that insulation and thermal-envelope improvements can reduce exposure to extreme temperatures and dampness and help reduce risks associated with asthma, allergies and cardiovascular and respiratory disease.

Let the construction method compete for the job

The Future Home should not be synonymous with modular construction, 3D printing, mass timber or any other favourite technology. There may not be one best construction method.

AI could compare conventional wood frame, cold-formed steel, mass timber, insulated panels, precast concrete, volumetric modular, panelized systems, 3D construction printing and hybrids against the objectives of a specific site and population.

For one project, panelization might win. For another, volumetric modular might remove months of schedule risk. Somewhere remote, transporting flat-packed components may beat shipping completed modules.

Elsewhere, local wood framing may remain the rational answer. The important change is that we stop choosing a method because it is fashionable and start choosing it because the numbers support it.

Denmark offers a striking current example. At Skovsporet in Holstebro, 3DCP Group completed 36 student apartments across six buildings for affordable-housing organization NordVestBO. The buildings total about 1,650 square metres. The same three-person printing crew produced the walls, and by the final building it was printing the walls for six apartments in five working days. The reported building construction cost was 1,880 euros per square metre, below Denmark's statutory cost ceiling for subsidized housing. The first residents have moved in.

That does not mean 3D printing has solved housing. Roofs, interiors, mechanical systems, windows and finishes still have to happen. It means a piece of the construction process has been fundamentally altered, which is the useful lesson.

We should be looking at every part of the house that way. Where does automation remove labour without reducing quality? What can be manufactured locally? What should come from a factory? What can be assembled on site? Which components can be standardized without producing identical homes? This is where modern methods of construction become more interesting than simply 'modular.'

Energy efficiency is a household affordability strategy

The Future Home should also understand that construction cost and affordability do not stop at occupancy. Consider heating.

Ireland's Sustainable Energy Authority explains that a well-designed heat pump can use less than one-third of the energy of an oil or gas boiler, although actual economics depend on the building, tariff and system design. It also emphasizes something housing policy frequently gets backwards: heat pumps perform best when the building envelope is good first.

That is systems thinking. Do not install a sophisticated heating system in a house that leaks heat. Build the envelope, ventilation, mechanical systems, orientation, glazing and controls as one system, then measure the result.

In Ireland, demand for residential energy upgrades has risen sharply. In the first quarter of 2026, overall applications for home energy upgrades were up 96 per cent year over year, while applications for heat-pump installations were up 95 per cent. The government is targeting 73,000 home upgrades in 2026.

People are not buying 'decarbonization.' They are buying warmer homes, lower energy consumption, comfort, resilience and protection from future energy costs. Climate goals and household goals can be the same investment when the system is designed properly.

A smart home should notice what matters

This is where the word smart needs to be rescued. For years, smart homes have been marketed as collections of gadgets. A connected thermostat. A video doorbell. An app-controlled light. A refrigerator that can apparently tell us we need milk. That is not the opportunity.

A truly smart home understands the human condition. A senior gets up at 2:00 a.m. to use the bathroom and the route illuminates gently before she reaches for a switch. A child has asthma and indoor air quality, humidity

and ventilation become part of the home's health infrastructure. A pipe begins leaking behind a wall and the building discovers it before the resident discovers a ruined floor. A person with limited mobility approaches the entrance carrying groceries and access works for them. A resident who normally moves around every morning suddenly does not and, depending on the resident's choices and privacy settings, that change may warrant a check-in.

None of this is science fiction. Singapore has been testing exactly this intersection between housing, technology and care. Its Ministry of Health has reported on smart-home sensors, medication adherence tools, meal-support services and home-care systems for seniors. In one program, seniors reported reassurance from knowing caregivers could be contacted in an emergency, while the system was associated with improved medication adherence, improved staff productivity and reduced hospital admissions.

Singapore is now moving further. Under its national ageing strategy, technology-enabled fall and incident monitoring is being incorporated into enhanced home-care services, while wireless emergency alert systems are being extended through public rental housing.

This is the difference between installing technology and designing a social-care system. The sensor is not the innovation. The response is.

There is a significant financial return hidden inside independence

Consider what happens when a home allows someone to live independently for longer. A grab bar is inexpensive. Good lighting is inexpensive. A wider doorway is easier to build on day one than retrofit fifteen years later. An accessible shower, lever handle, appropriate floor surface or carefully located electrical control may add little during construction.

Yet the human consequences can be enormous. Falls are one of the clearest examples. The U.S. Centers for Disease Control and Prevention recommends home modifications including grab bars, stair railings and better lighting as fall-prevention measures, and its evidence compendium includes multiple home-modification interventions.

Singapore has gone further by integrating ageing-in-place modifications directly into public housing. Its 2026 Home Improvement Programme includes subsidized senior-friendly fittings such as grab bars, ramps, rocker switches and fire alarms. More than 18,000 additional flats were selected for upgrading in the latest program, supported by more than S$253 million in investment.

Japan has also explicitly connected housing policy with ageing, health and community. Its national policies promote service-supported senior housing, barrier-free improvements, housing linked to welfare services and IoT technologies that can help deliver services without requiring constant physical contact.

These countries are beginning to recognize something financially important. The cheapest place to provide care may be the home, provided the home has been designed to make care possible.

But the smart home can also go terribly wrong

If we fill homes with cameras, microphones, sensors and AI without responsible AI governance, we can create environments that are technically intelligent and socially unacceptable. A home is one of the most private places a human being has.

Residents need to know what information is being collected, why it is being collected, who can see it, how long it is retained and how they can turn it off. A fall-detection system does not automatically require a camera. A motion pattern may sometimes be enough.

That distinction becomes particularly important for seniors, children, people with disabilities and residents of affordable or community housing. A person should never be required to surrender privacy as the price of receiving housing or care.

The Future Home should therefore follow a simple principle: collect the minimum information necessary to deliver the agreed human benefit. That is responsible AI, and it is why AI governance belongs inside housing design rather than in a policy binder written years after people move in.

AI literacy matters here too. Residents need plain-language ways to understand what is automated, what can be changed, what data leaves the home and what remains local. A truly intelligent house should increase human agency, not quietly remove it.

The community may matter even more than the house

One of the greatest mistakes we could make is designing an extraordinarily intelligent home and placing it in a socially unintelligent community. Technology cannot replace people.

The evidence around loneliness makes that painfully clear. The World Health Organization reported in 2025 that one in six people globally experiences loneliness. It estimates loneliness is associated with more than 871,000 deaths annually, while social isolation may affect as many as one in three older adults. Loneliness is associated with higher risks of cardiovascular disease, cognitive decline, depression and premature death.

So a Future Community should ask questions that a normal site plan may never ask. Where will people encounter one another naturally? Can an older resident walk somewhere meaningful? Can a parent watch a child play while talking to a neighbour? Are benches an amenity or part of preventative healthcare? Do paths actually connect people, or merely move them to parking lots? Could a greenhouse, workshop, community kitchen, walking loop or shared garden do more for wellbeing than another room full of exercise equipment nobody uses?

This is where densification has a human purpose. Enough people living within a comfortable walking distance can support transit, childcare, shops, social programs and shared spaces. Too little density can isolate people and make services economically impossible. Too much poorly designed density can create its own problems.

The optimization target should therefore be neither maximum density nor minimum density. It should be useful density: density that makes a community work.

Smart infrastructure can quietly make a community better

Pieces of this already exist. Singapore's public housing system uses sensors in common areas to understand lighting demand and pedestrian movement. Its smart lighting can dim when areas are unused and brighten as people approach, reducing energy consumption by as much as 60 per cent in common areas while maintaining useful lighting for residents.

At the larger district scale, Singapore's Punggol Digital District uses an Open Digital Platform connecting building and district systems including cooling, lighting and other infrastructure. A digital twin allows operators

to visualize and manage those systems together rather than as disconnected technologies.

That is what interoperability looks like when it leaves the PowerPoint deck. Different systems exchange information because the community benefits from the connection. The Future Community should work the same way.

The digital model should survive construction

One of the strangest things we do in housing is spend enormous effort creating information about a building and then allow much of it to fragment after construction. The architect has one version. The engineers have another. The contractor has shop drawings and deficiencies. The municipality has approvals and inspection records. Equipment manufacturers hold warranty information. Property managers build another database. Residents eventually discover what actually works.

The Future Home should have a Single Digital File that follows it throughout its life: drawings, materials, equipment, inspections, warranties, maintenance, energy systems, renovations, accessibility features and approved changes. In simple terms, the house should know what it is made of.

Singapore's CORENET X is already moving regulatory approvals toward coordinated BIM submissions. Its Model Checker can automatically evaluate models against modelling standards and selected regulatory requirements. The objective is to identify problems before submission, reduce iterations and allow multiple agencies to work from coordinated digital information.

Singapore has also described how those detailed BIM models can continue downstream into construction and eventually provide the basis for digital twins used by facilities managers. Estonia is moving in the same direction. Its e-construction platform is bringing land and spatial services together and preparing BIM-based permitting, with the broader objective of reducing duplicated systems, reducing errors and shortening processes that can otherwise take weeks.

Once information follows the asset rather than the organization, digital transformation stops being about software and starts changing how housing is actually delivered. That creates productivity gains, but more importantly it opens the door to genuine housing reinvention.

This eventually changes finance too

The same information can improve risk allocation. Affordable housing does not simply suffer from insufficient profit. Projects often require one party to accept enormous development risk long before enough uncertainty has been removed: land risk, approval risk, construction-cost risk, interest-rate risk, supply risk, schedule risk, lease-up risk and operating risk.

Better information cannot remove all of those risks, but it can identify them earlier and make them easier to allocate. A lender who can see verified construction progress is in a different position from one waiting for a monthly spreadsheet. A housing provider that knows the actual maintenance history of every building component can forecast capital requirements differently. A government providing funding can see whether promised performance is actually being achieved.

An insurer may eventually price a building differently when leaks, smoke, temperature anomalies or equipment failure can be identified before a loss becomes catastrophic. This is where AI infrastructure, digital twins,

workflow automation and interoperability stop being technology projects. They become financial infrastructure.

That opens the door to better blended-finance models because risk can potentially be separated, measured and assigned to the party best able to manage it.

There is also a cost to doing nothing

This is perhaps the most important part of the business case. The choice is not between an expensive Future Home and a cheap conventional house. The existing system has enormous hidden costs.

In Canada, 10 per cent of households were in core housing need in 2021. Among renters, the rate was 20 per cent, and 89 per cent of renter households in core need were facing an affordability problem.

Globally, the problem is staggering. UN-Habitat's 2026 World Cities Report estimates that as many as 3.4 billion people lack secure, safe and adequate housing, with more than one billion living in informal settlements and slums. The global housing deficit increased from an estimated 251 million units in 2010 to 288 million in 2023.

Poor housing then shows up somewhere else: in healthcare, energy poverty, homelessness services, lost productivity, caregiver burden, preventable falls, respiratory illness, social isolation, children trying to learn without adequate space and seniors leaving their communities earlier than necessary because their homes can no longer support them.

We pay for bad housing. We simply do not put all of the costs on the same spreadsheet. That may be the biggest opportunity for housing innovation.

The Future Home already exists. Just not in one place.

The most interesting discovery is that very little of this requires us to invent something that does not exist. Denmark is printing part of the building. Singapore is connecting housing, sensors and elder care, while also linking BIM, digital regulatory approval and automated compliance checking. Estonia is digitizing the relationship between land, buildings and government. Ireland is treating building envelopes, heat pumps and household energy as a connected system. Japan is connecting housing, ageing, accessibility, welfare and technology.

Around the world, modern methods of construction, digital twins, responsible AI, building sensors, automated compliance, high-performance envelopes and human-centred care models are all advancing. What does not yet exist at scale is the system that brings them together around the human being.

That is the opportunity. The Future Home begins with a person and a life. Then we understand the lot, test the community, choose the building form, compare construction methods, evaluate materials, optimize the energy system and add technology only where it creates measurable human value.

Throughout that process we should keep asking the same questions. Does this make the home less expensive? Faster to deliver? Safer? Healthier? More accessible? More resilient? Easier to operate? Better able to adapt as someone's life changes? If the answer is no, we should probably not be doing it.

The most radical innovation in housing may not be 3D printing, artificial intelligence, modular construction or a smart-home sensor. It may simply be changing what we optimize for.

For decades, we have optimized buildings. The next generation of housing should optimize lives.

The concepts explored in this article are brought to you by FutureLand, with solution design and implementation thinking from Green Teaming, as part of our work examining how the next generation of homes and communities can become more affordable, intelligent, adaptable, resilient and human.

Sources and Further Reading

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About the Author

Tracey DeLeeuw

Tracey DeLeeuw works at the intersection of housing, real estate, technology and community development. Her career has moved through transaction processing, digital platforms, smart buildings, smart cities, real estate, AI, automation and housing, but the thread has stayed consistent: understand how people actually live and work, then design the systems around them.

Today that work comes together through three connected ventures. Green Teaming is the consulting, solution-design and implementation practice, helping organizations rethink strategy, AI, automation, security, digital transformation and the systems that connect people, process and technology. FutureLand Communities applies that thinking to the built environment, bringing together land, housing, modern methods of construction, infrastructure, finance, digital systems and long-term community operation.

SheSmartTech brings the thinking all the way inside the home. Its books, guides and solutions explore what technology can do for the person actually living there: the parent carrying the mental load, the senior who wants to remain independent, the caregiver, the child, the person living alone. The work begins with the human, the routine and the risk, not the device.

Across all three, the philosophy is the same: design the system, build the community, operate it intelligently, and use technology as the human enabler and connector. A home should not be designed around the technology inside it. The technology, the building and the community should be designed around the human.





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