2026 HOUSING MISSION BRIEF

# Scaling digital transformation for housing delivery in British Columbia

## Unlocking faster, smarter, and more equitable housing

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EXECUTIVE SUMMARY

# Scaling digital transformation for housing delivery in British Columbia

## British Columbia is at a critical turning point.

Escalating housing demand, low vacancy rates, and rising costs are exposing systemic inefficiencies: fragmented permitting, inconsistent regulations, and uneven digital readiness. These pressures demand coordinated digital modernization to accelerate housing production, improve equity, and build resilience.

DIGITAL's Housing Growth Innovation (HGI) program turns vision into action. With 12 co-invested projects valued at over 13 million dollars, HGI is advancing BC's digital housing roadmap through machine readable codes, automated permitting, modular manufacturing, and inclusive governance. This is not simply a technology upgrade; it is a coordinated shift toward a faster, smarter, and fairer housing system that can deliver more homes, sooner, in every community.

This updated mission brief builds on the 2024 roadmap and 2025 sector engagement, including the Breaking Silos workshop. HGI projects are reshaping housing from design to delivery, with tangible innovations ready for province-wide scaling.

**The roadmap is no longer theoretical; it is a living reality grounded in tangible examples of innovation driving measurable progress across BC's housing ecosystem.**

# Context

## URGENCY FOR CHANGE

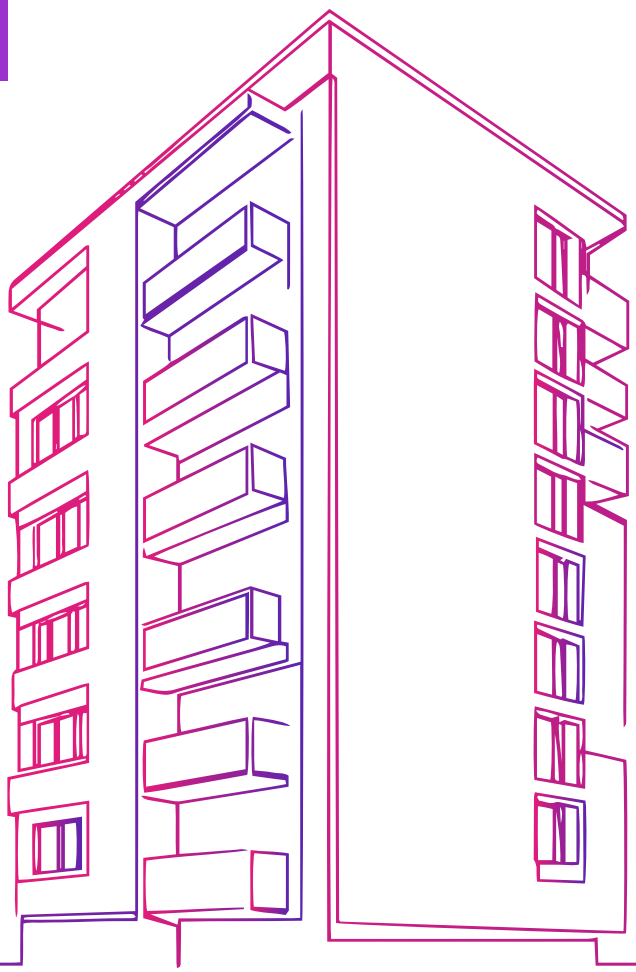
BC's population growth and intensifying housing pressures have exposed deep structural weaknesses in the housing production ecosystem. Many jurisdictions still rely on fragmented, paper-based permitting, bespoke local requirements, and manual interpretation of complex regulations. As a result, the province cannot deliver homes at the speed and scale required. Inconsistent submission requirements, data formats, and interpretations of the BC Building Code create a patchwork of processes that slow approvals, increase costs, and disproportionately disadvantage smaller, rural, and Indigenous communities. Together, these conditions create delays, uncertainty, and significant administrative burden for both municipalities and industry that are slowing housing delivery at every stage (BC Ministry of Housing, 2024a).

> **"We can't continue to use the same tactics and expect different results. We must innovate and improve permit times and speed up construction to achieve our government's goal of delivering more homes for people."**
>
> Hon. Ravi Kahlon, former BC Minister of Housing and Municipal Affairs, 2024

## HOUSING GROWTH INNOVATION (HGI) PROGRAM

The **Housing Growth Innovation (HGI) program** was launched in 2023 in partnership with the Government of BC as a direct response to these barriers, building on provincial and federal momentum to catalyze mission-driven innovation, digital adoption, and collaborative action across industry, communities, and government.

Digital transformation is now widely recognized as essential to addressing these challenges. Digitizing the BC Building Code, standardizing data, and adopting interoperable platforms are foundational levers to modernize construction, support decarbonization, improve productivity, and accelerate housing delivery. Provincial strategies and federal roadmaps converge on the same themes: performance-based regulation, integrated digital workflows, modular and prefabricated construction, and open standards that allow solutions to scale across jurisdictions.



## BREAKING SILOS

Sector engagement has reinforced both the urgency and the readiness for change. In 2025, the *Breaking Silos: BC Building Code and Digital Integration* workshop brought together nearly 90 representatives from government, industry innovators, Indigenous leadership, and academia. The insights generated provided a clear mandate for a coordinated digital transformation roadmap, with strong alignment around the need for a provincial strategy that embeds digital tools, shared standards, and collaborative governance at the core of housing delivery. Participants expressed clear consensus on three urgent priorities:

1. Establish a province-wide digital transformation plan and robust governance framework for housing, with clear accountability and collaborative decision-making.
2. Standardize open data and interoperability across the sector to enable real-time sharing, tracking, and analytics.
3. Address persistent inequities in municipal digital readiness and technological access, regardless of community size or geographic location.

The original mission brief, issued in 2024 and titled *Housing in British Columbia: A Blueprint for Change*, set the initial direction for the HGI program. This updated brief builds on that foundation with a **digital transformation roadmap**, supported by **strategic pillars**, that expands on outcomes from sector engagement. It highlights the pivotal role of digital tools, improved data standards and governance, agile regulation, and proactive capacity-building in accelerating housing delivery.

**The 2026 Mission Brief represents more than incremental reform; it is a bold reframing of housing as a mission-driven ecosystem ready to deliver on the promise of accessible, affordable homes for British Columbians at scale.** This is not simply a technology upgrade. It is a coordinated shift toward a faster, smarter, and fairer housing system. By positioning BC as a Canadian leader in digital permitting and construction innovation, the HGI portfolio creates pathways for adoption province-wide and nationally.

# Digital Housing Roadmap

## ROADMAP VISION

A connected, digital-first housing system where streamlined regulatory processes, seamless data flows, and strong digital capacity enable faster, more affordable, and more equitable homebuilding in every BC community. Digital tools, standardized data, and collaborative governance are not optional enhancements but core infrastructure for a resilient and responsive housing ecosystem.

## ROADMAP MISSION

Accelerating housing production capacity in BC by creating a faster, fairer, and more predictable housing system where digital innovation, shared standards, and collaborative governance enable better housing outcomes for all communities.

## ROADMAP STRATEGIC OBJECTIVES

- ✓ Drive rapid, measurable improvements through collaborative innovation
- ✓ Strengthen alliances across government, industry, Indigenous partners, and academia
- ✓ Address systemic barriers identified through sector engagement
- ✓ Maintain a "living laboratory" that continually tests, refines, and scales digital approaches

The HGI program is advancing these strategic objectives through the delivery of 12 challenge projects, ecosystem development, and workforce adoption and mobilization. (See Appendix B).

These strategic objectives align with federal initiatives, including the National Research Council Canada (NRC)'s Construction Sector Digitalization and Productivity Challenge Program. The NRC's roadmap elevates digitization as a central lever to modernize construction, encourage decarbonization, and boost productivity (NRC, 2023). These recommendations resonate with BC's digital strategy, focusing on performance-based regulation, fully integrated digital workflows, and modular construction to foster sector-wide resilience.

## HOW THE ROADMAP WORKS

The roadmap focuses on the housing approvals and delivery ecosystem. It does not replace housing policy or funding programs but establishes the digital and governance foundations for those programs.

Focused actions include:

- → Digitizing the BC Building Code into machine-readable, modular rules
- → Modernizing municipal permitting and inspection workflows
- → Building shared data infrastructure and interoperability
- → Strengthening digital capacity in under-resourced and Indigenous communities

As a living document, the roadmap evolves through stakeholder feedback, pilot outcomes, practical deployment of digital solutions, and HGI project insights. Each HGI project contributes evidence, tested methods, and lessons learned, enabling the Government of BC to refine standards and scale solutions effectively.

# Roadmap at a Glance

The roadmap unfolds in four phases between 2025 and 2029 and beyond, moving from foundational digitization to advanced, predictive, data driven systems.

## 2025 - 2026

### IMMEDIATE

- Scale proven innovations
- Deploy standardized blueprint designs
- Expand digital permitting platforms such as Permit Hub
- Complete core diagnostics on digital readiness and data standards

## 2026 - 2027

### SHORT-TERM

- Complete digitization of the BC Building Code
- Establish and operationalize the Digital Housing Governance Council
- Achieve baseline digital capacity across municipalities

## 2027 - 2029

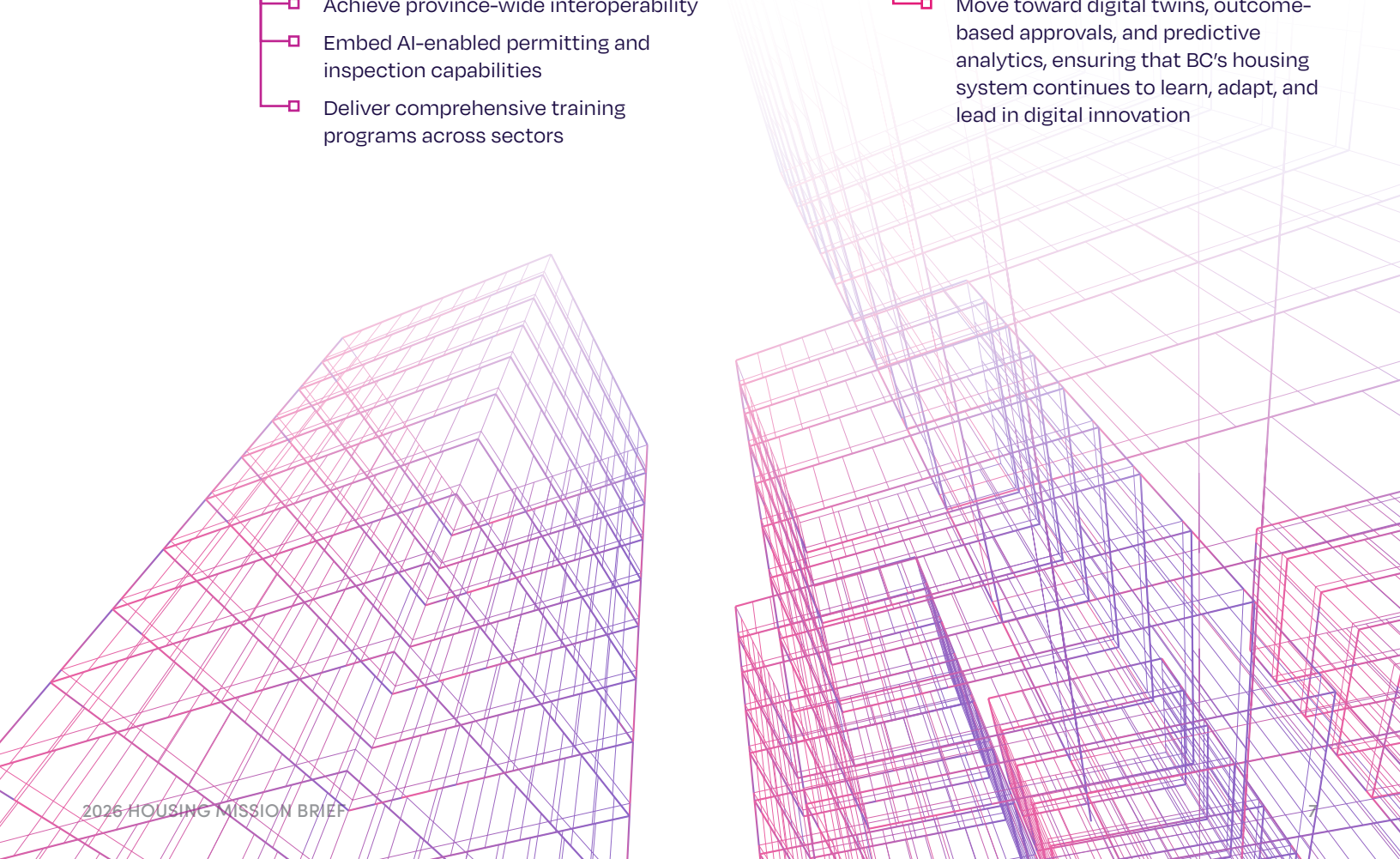
### MEDIUM-TERM

- Achieve province-wide interoperability
- Embed AI-enabled permitting and inspection capabilities
- Deliver comprehensive training programs across sectors

## 2029+

### LONG-TERM

- Move toward digital twins, outcome-based approvals, and predictive analytics, ensuring that BC's housing system continues to learn, adapt, and lead in digital innovation



# Six Strategic Pillars

## Integrated Framework

The digital housing roadmap is built on coordinated, practical shifts across six interdependent pillars, each actively advanced by HGI projects. Together, these pillars form a system wide transformation that enables experimentation, learning, and scaling of successful innovations. For more details on each pillar, including the impacts of HGI projects, view **Appendix A.**

PILLAR 1

### Digital Policy and Rules Lifecycle Management

→ Make housing rules computable so approvals can be faster and more predictable. This pillar focuses on turning the BC Building Code and related regulations into machine readable, modular rules that support automation and consistent interpretation.

PILLAR 2

### Municipal Digital Capacity and Engagement

→ Build the digital capacity of municipalities, especially rural, small, and Indigenous communities. This pillar provides shared tools, templates, training, and support so every community can participate in and benefit from digital permitting and housing innovation.

PILLAR 3

### Data Infrastructure and Interoperability

→ Create shared data infrastructure and standards so systems can talk to each other. This pillar establishes common data environments and open APIs to enable real time reporting, seamless information exchange, and advanced analytics across the housing system.

PILLAR 4

### Governance and Inclusion

→ Put clear, inclusive governance around digital housing standards and decisions. This pillar supports structures such as a Digital Housing Governance Council and cross sector committees that steward standards, coordinate pilots, and ensure transparent, accountable decision making.

PILLAR 5

### Trust, Certification, and Transparency

→ Build confidence in digital tools and new delivery models. This pillar pilots certification, audit trails, and performance dashboards so municipalities, industry, and the public can see how decisions are made and rely on digital systems for compliance and quality.

PILLAR 6

### Equity and Regional Support

→ Ensure every community benefits from digital transformation, not just large centres. This pillar prioritizes rural, remote, and Indigenous communities with accessible tools, pre-certified templates, and targeted capacity building to prevent a new digital divide in housing delivery.

# Stakeholders, Governance & Technologies

## STAKEHOLDERS

Delivering this mission requires coordinated action among the following stakeholders:

- **Provincial ministries** — Set direction and invest in shared infrastructure
- **Municipalities and regional districts** — Implement digital permitting and planning
- **Indigenous governments** — Lead context-specific innovation
- **Industry, manufacturers, and technology providers** — Co-develop tools and processes

## GOVERNANCE MODEL

The governance model pairs a **province-wide strategy** with collaborative structures such as a **Digital Housing Governance Council** and **cross-sector committees**. These bodies steward standards, align decisions, and provide mechanisms for resolving issues.

**HGI-led engagement** like workshops, panels, and knowledge-sharing forums ensure that feedback from pilots, municipal experiences, and community partners is continuously integrated into roadmap updates and policy design. These sector-wide engagement activities, including the *Breaking Silos* 2025 workshop, practitioner panels, conference sessions, and related forums, surface insights, share tools, and strengthen the relationships needed to support scaling and adoption across the province.

## TECHNOLOGIES

The HGI portfolio employs a suite of integrated technologies that work together across the housing delivery lifecycle, from digital design and manufacturing to permitting and compliance. These five technology streams are not siloed; they integrate seamlessly.

### CLOUD-BASED AND AI PLATFORMS

- AWS, Google Cloud Platform (BigQuery, Storage, Neon PostgreSQL), and Autodesk Construction Cloud support data pipelines and real-time access in **Buildblox, Kelowna mddl,** and **Malahat Nation Archistar.**
- AI features like LLMs, AI readers, generative design, Inspector AI (machine learning predictions), and parametric modeling automate workflows, scenario generation, and policy digitization in **Buildblox, Cloudpermit, Malahat**, and **OK Laminators.**

### BIM AND PARAMETRIC DESIGN

- Revit, hsbcad, Fusion 360, Cadworks, and parametric tools create interoperable models for design-to-manufacturing handoffs in **ETRO, Naikoon Flying Factory, Nak'azli, Perkins & Will,** and **Multi-Micro Arno Matis.** These integrate with EnergyPlus for energy modelling and support ISO 19650 standards in Common Data Environments for lifecycle compliance.

### DIGITAL ERP AND MODULAR SUPPLY CHAINS

- Modular ERP platform orchestrates unified pipelines ingesting fragmented manufacturer data into IFC models for analytics in **Buildblox.**
- FME normalizes data, Prefect manages pipelines, and open APIs enable ERP integration with permitting systems like BC Building Permit Hub in **ClarityBC, Radical I/O** and **Kelowna mddl.**

### OFF-SITE MANUFACTURING

- QR-code tracking, digital job travelers, and factory QA in **Naikoon, Wesgroup** (CFS wall panels), and **ETRO** prefab cassettes ensure traceability from design to installation. Roll-forming automation and hsbMake/hsbStickFrame tools link BIM to production, reducing timelines by up to 30%.
- Parametric design integration (Revit, Fusion 360, hsbcad) enables design-to-manufacturing handoffs that align with modular code standards and BIM workflows.
- Supply chain data orchestration via **Buildblox** normalizes fragmented manufacturer data into IFC models for real-time visibility and cost optimization.

### RAPID DIGITAL PERMITTING AND COMPLIANCE TOOLS

- IFC/OpenBIM standards, compliance logs, audit dashboards, and machine-readable codes accelerate approvals in **Buildblox, Cloudpermit,** and **Multi-Micro.**
- GIS Lot Identification (**mddl**), electronic plan reviews, AI plan checks, and digital signatures benchmark readiness and enable risk-based frameworks province-wide.

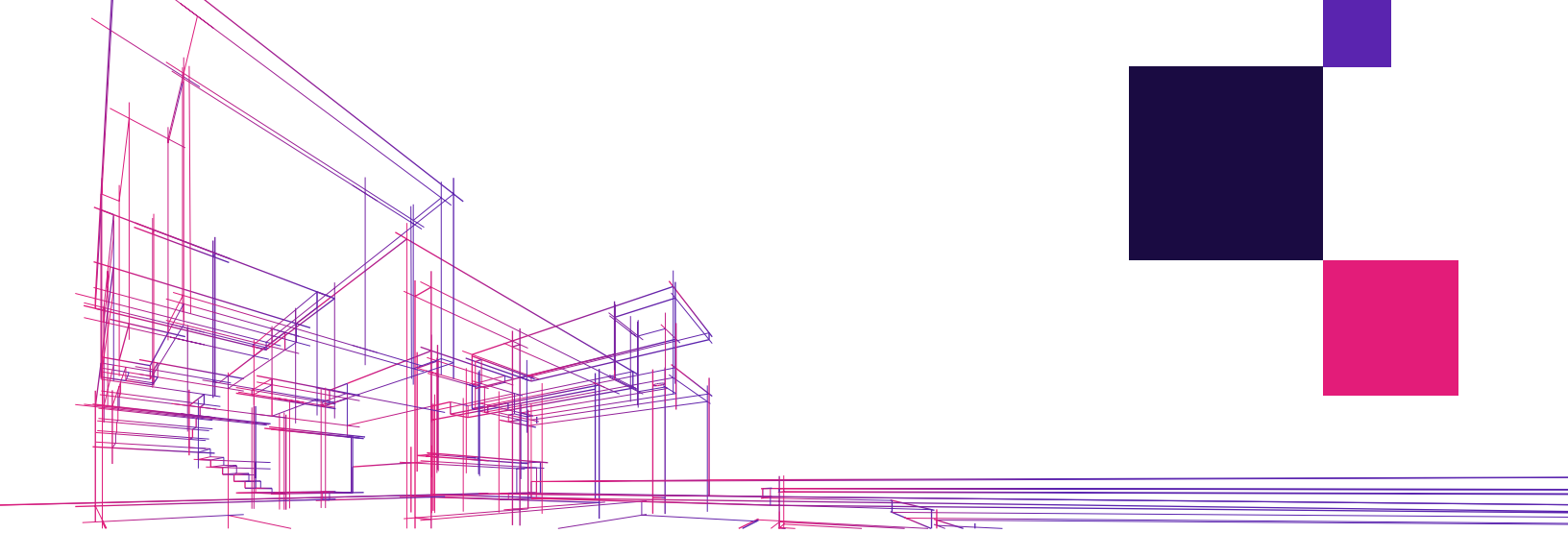
# Risk Mitigation & Tracking

## RISK MITIGATION STRATEGIES

The roadmap anticipates common risks and embeds mitigation strategies from the outset, so digital transformation can scale without destabilizing the housing system.

| RISK | MITIGATION | ILLUSTRATIVE EXAMPLES |
|---|---|---|
| **Fragmentation**<br>Inconsistent permitting systems, code interpretations, and data models | → Province-wide standards<br>→ Digital Housing Governance Council | Interoperability demonstrated through standardized designs, MEP components, and BIM-based processes |
| **Capacity Gaps**<br>Under-resourced municipalities and communities lag in digital readiness | → Targeted funding; training<br>→ Shared platforms (e.g., Permit Hub)<br>→ Peer networks | Digital capacity mapping and demonstration models with templates and training pathways |
| **Adoption Resistance**<br>Hesitation to move from manual, legacy systems | → Stakeholder engagement<br>→ Pilots<br>→ Transparent reporting<br>→ Demonstrated ROI | Pilots showcasing tangible benefits, supported by regular knowledge-sharing |
| **Data Privacy & Security**<br>Risks to data integrity and privacy as digitization increases | → Strong digital standards<br>→ Privacy frameworks<br>→ Best practices<br>→ Compliance logs | Secure audit trails, encryption, and vetted cloud platforms integrated into workflows |
| **Technical Integration**<br>Challenges in data handover and system integration | → Documented handover processes<br>→ Early identification of integration issues | Standardized data exchange formats and end-to-end workflow documentation |
| **Equity Implementation**<br>Digital benefits not reaching underserved communities | → Prioritized funding<br>→ Accessible tools<br>→ Subsidized onboarding<br>→ Indigenous co-leadership | Indigenous-led projects, Flying Factories, and accessible templates for rural/small municipalities |
| **Sustainability**<br>Pilot innovations fail to transition to production | → Open design<br>→ Knowledge sharing<br>→ Transition planning | Open standards, shared documentation, and intentional scaling plans embedded in pilot design |

These strategies draw on lessons from local pilots and international leaders in digital permitting (e.g., Dubai, Finland), validating the importance of shared tools, strong governance, and open digital standards (Breaking Silos Workshop, 2025; Dubai Municipality, 2022). Real-world testing enables risks to be identified and addressed before province-wide deployment.



## TRACKING IMPACT AND CONTINUOUS LEARNING

Tracking impact and continuous learning is central to this mission. The HGI program collects data through project tracking and reporting to build baselines, assess progress, and guide course corrections as conditions evolve. Regular reporting, dashboards, and evaluations ensure that the key performance domains outlined below directly inform roadmap updates and investment choices, giving the Province and partners evidence to prioritize investments, refine standards, and decide which pilots to scale.

### Key Performance Domains

#### SPEED TO APPROVAL

Automated compliance checks, streamlined BIM workflows, and AI-assisted reviews in pilots are already indicating reductions in permitting timelines.

#### ACCESS & EQUITY

Projects such as Nak'azli and mddl/Kelowna demonstrate how digital benefits can extend to smaller and rural communities.

#### DATA QUALITY & STANDARDS

Unified data pipelines, IFC normalization, and emerging API standards are improving cross-sector analytics and transparency.

#### STAKEHOLDER ENGAGEMENT

Knowledge-sharing events, peer learning networks, and workshops are building broad-based support for digital transformation.

#### MUNICIPAL ADOPTION

Share of BC municipalities using digital permitting systems.

#### PERMIT TIMELINES

Average approval times before and after digitization.

#### INDUSTRY UPTAKE

Use of machine-readable codes, BIM, and standardized designs.

#### USER SATISFACTION

Feedback from municipal staff, industry, and applicants.

# Next Steps

## Achieving this mission requires province-wide participation.

- **Municipalities** can adopt standardized designs, join digital permitting pilots, and participate in peer-learning networks.
- **Industry partners** can integrate BIM and digital QA processes, contribute to open standards, and support pilots that test new delivery models.
- **Indigenous and rural communities** can shape and lead locally relevant innovations, supported by dedicated tools, capacity-building, and equitable access to digital infrastructure.

All stakeholders are invited to engage in working groups, share lessons from implementation, identify gaps and opportunities, and champion digital-first practices within their organizations. Resources, documentation, and updates are available through established HGI platforms and program channels.

## SUSTAINING MOMENTUM

The path forward builds on the foundation established by HGI:

- Scale up proven innovations across more municipalities and industry partners
- Standardize data and integrate platforms, prioritizing interoperability
- Keep learning loops open: consult widely, share results, and adjust as needed.
- Transition successful pilot projects to production implementation
- Document and disseminate lessons learned to accelerate adoption province-wide
- Continue investing in innovation through subsequent HGI cohorts and related programs

## NOW IS THE TIME TO GET INVOLVED

Take one or more of the following actions to support and benefit from this mission.

- ✓ Visit **housing.digitalsupercluster.ca** to learn more about HGI projects and access shared resources.
- ✓ Explore opportunities to adopt proven innovations from HGI projects in your work.
- ✓ Join working groups focused on data, governance, and technology.
- ✓ Submit feedback and share lessons from your local experience.

# Conclusion

## FROM ASPIRATION INTO ACTION

**Now is the moment to scale what works. BC's housing system is at a pivotal moment. The limitations of legacy processes are well understood, and the potential of digital transformation is now being demonstrated in practice.**

Through a mission driven **digital transformation roadmap**, clear **strategic pillars**, and a **growing portfolio** of concrete initiatives, the Province is building the digital, governance, and capacity foundations needed to deliver more, and better, housing faster. By acting together, government, industry, Indigenous and rural communities, and academia can build a faster, smarter, and more equitable housing system in BC. Digital innovation is no longer a choice; it is the infrastructure required to unlock the homes British Columbians need.

The HGI program is helping move this vision from aspiration into action. With 12 active projects showing measurable progress across all six strategic pillars, BC is establishing the evidence base and practical pathways required for province-wide digital transformation. These initiatives are not isolated pilots; they form an interconnected system that shows how digital tools, standardized approaches, and collaborative governance can accelerate housing delivery.

HGI has shown that collaborative innovation delivers real results. The next step is clear: turn pilots into practice, align systems around shared standards, and accelerate digital transformation across the province. With committed leadership, continued investment in capacity, and a spirit of cross sector collaboration, BC can set a national and international standard for digital housing delivery. The future of housing in BC is here: better service, faster approvals and construction, lower costs, and more equitable access to housing, driven by collective innovation and a shared commitment to a digitally enabled future.

**The roadmap is no longer just a plan. It is a living framework actively shaping transformation across the province and ready for broader scaling.**

# Appendix A

## STRATEGIC PILLARS

PILLAR 1

### OBJECTIVE

Make all codes and regulations required to develop, design, build, and occupy homes machine-readable and modular to support automation, reduce delays, and increase predictability across the housing delivery lifecycle.

### ACTION

Complete and launch a machine-readable, modular BC Building Code using open standards (e.g., JSON) for seamless integration with permitting, BIM, and compliance tools. This enables rule-level searchability, date/version tracking, and interoperability across digital systems.

### IMPACT

Clarifies regulatory pathways, accelerates approvals, especially for modular construction and demonstrates how automated compliance can operate at scale. Machine-readable codes reduce manual interpretation, enable AI-assisted reviews, and position BC as a leader in performance-based regulation, drawing on international examples such as Finland and the ACCORD initiative (European Commission, 2023). This work also generates essential insights to inform the design of a comprehensive digital policy and rules-management ecosystem.

# Digital Policy & Rules Lifecycle Management

Make housing rules computable so approvals are faster and more predictable.

### HGI PROJECTS IN ACTION

- **Buildblox (Modular ERP & Supply Chain Platform)**
  Automates modular workflows, code modularization, and regulatory integration using cloud-based AI platforms, BIM, and parametric design. Leverages LLMs and AI readers to parse regulatory requirements.
- **Radical I/O (ClarityBC Diagnostics)**
  Brings clarity to permitting systems and processes to inform provincial permitting policies, creating a diagnostic foundation for standardization efforts.
- **Cloudpermit (Inspector AI)**
  Establishes data-driven decision-making methodology for building inspection, creating site-specific construction deficiency predictions using machine learning. Reduces building delays and increases construction quality through risk-based regulatory frameworks.
- **ETRO (Prefab Cassettes)**
  Applies modular code standards in digital permitting workflows for prefabricated offsite housing, documenting the handoff of data from Design to Construction to Manufacturing using Autodesk Construction Cloud.
- **Malahat Nation (Archistar 3D Generative Design)**
  Uses generative design and parametric modeling to automate scenario generation. Cloud-based rules management digitizes Malahat-specific, provincial, and national planning requirements into a repeatable, maintainable policy framework.
- **Multi-Micro (Arno Matis Architecture)**
  Translates zoning, building, and regulatory requirements into machine-readable digital rules that can be applied directly to BIM data, enabling automated compliance assessments for mid-scale and multi-residential housing.
- **OK Laminators (CFS/CLT Hybrid Tool)**
  Develops parametric design web application supporting structural design under BC Building Code 2024, providing real-time cost and carbon feedback to users.
- **Kelowna Fast Track Middle Density (mddl)**
  Launches GIS Lot Identification technology integrated with digital infill plans, creating a unified dataset that bridges municipal policy, industry, and community-led development.

PILLAR 2

## OBJECTIVE

Scale municipal digital capacity—especially for rural, small, and Indigenous communities—through shared tools, templates, training, and provincial support.

## ACTION

Expand Permit Hub and related platforms; provide standardized templates; deliver ongoing training and funding; and foster peer-learning networks so municipalities can benchmark progress and share best practices.

## IMPACT

Establishes a digital baseline that enables advanced permitting features—such as AI-assisted review and greater transparency—across the province (BC Ministry of Housing, 2024c). By creating a shared digital foundation supported by standardized templates and training, municipalities of all sizes, including under-resourced communities, are better equipped to fully participate in and benefit from province-wide digital transformation.

# Municipal Digital Capacity & Engagement

Build municipal digital capacity, especially in rural, small, and Indigenous communities.

## HGI PROJECTS IN ACTION

- **Buildblox (Modular ERP Platform)**
  Provides platform education, outreach, and onboarding support for municipalities and SMEs. Engaged with multiple communities for platform testing and adoption.
- **Radical I/O (ClarityBC)**
  Determines municipalities' digitization levels and readiness; identifies resources needed; and provides peer benchmarking and diagnostic feedback across BC. Delivers the Housing Permit Digital Readiness Report to support targeted capacity-building investments.
- **Cloudpermit (Inspector AI)**
  Can be integrated into existing permitting systems, enabling municipalities to allocate inspection personnel more effectively. Enhanced construction quality limits municipal liability and improves public trust in the building regulatory system.
- **ETRO (Prefab Cassettes)**
  Pilots municipal digital workflows, providing replicable models for scalable prefab approvals that can be adapted across jurisdictions.
- **Kelowna Fast Track Middle Density (mddl)**
  Works closely with municipalities to align policy and housing goals through development of the GIS Lot Identification Tool and associated capacity-building and training. Demonstrates a scalable model adaptable to communities of all sizes.
- **Naikoon (Flying Factory Modular Prefab)**
  Builds capacity in First Nations and regional SMEs by training local teams on digital prefabrication tools and sharing lessons learned, demonstrating how panelized manufacturing can support local housing delivery compliance assessments for mid-scale and multi-residential housing.
- **Nak'azli (Mass Timber Housing Kit)**
  Works directly with Nak'azli Construction and local builders to build digital skills and fabrication capacity, with processes and templates designed for easy adaptation by other Indigenous or small-community partners.
- **Perkins & Will (Urban Timber Modular Housing)**
  Engages local government through targeted discussions on feasibility, digital plan-checking, and fast-track opportunities for repeatable designs. Provides clear, pre-engineered drawing packages that lower review burden.
- **Wesgroup (Digital CFS Wall Panel Manufacturing)**
  Provides local contractors best practices on digital production and prefabrication as well as rapid wall panel installation experience.

PILLAR 3

# Data Infrastructure & Interoperability

Create shared data infrastructure and standards so systems can talk to each other.

## OBJECTIVE

Standardize data and workflows across municipalities in alignment with ISO 19650, openBIM, and international best practices. Create reusable patterns for cost-effective data and service access via APIs.

## ACTION

Develop province-wide data standards, common data environments (CDEs), and open APIs to support real-time reporting, seamless information exchange, and advanced analytics.

## IMPACT

Unlocks real-time reporting, streamlined information sharing, and robust analytics for all stakeholders (ISO, 2018). Unified data pipelines reduce duplication and errors while enabling machine-learning insights for energy modelling, GHG assessments, and permitting optimization. Open API standards prevent vendor lock-in and support province-wide interoperability.

## HGI PROJECTS IN ACTION

- **Buildblox (Modular ERP & Supply Chain)**
  Orchestrates a unified data pipeline for the supply chain, ingesting fragmented data from manufacturers and normalizing it into industry-standard IFC models. This creates clean, interoperable datasets supporting open API-driven analytics, energy modeling with EnergyPlus, and GHG assessments.
- **Radical I/O (ClarityBC)**
  Identifies the digital permitting tools and technologies municipalities are using; determines readiness to integrate with provincial initiatives like the BC Building Permit Hub; and supports API capability assessment across the province.
- **Cloudpermit (Inspector AI)**
  Will create quality datasets from inspection notes to inform future decision-making. Offers cloud-native APIs, compliance audit logs, and open platform integration tools for permitting workflows.
- **ETRO (Prefab Cassettes)**
  Enables full traceability of design-to-assembly workflow data using Autodesk Construction Cloud for data exchange, integrating Revit with Autodesk Fusion 360 to move BIM from design to manufacturing.
- **Kelowna Fast Track Middle Density (mddl)**
  Standardizes and streamlines infill development using Google Cloud Platform with managed Neon PostgreSQL database hosted on AWS. Data pipelines managed with Prefect; data services use Google BigQuery and Google Cloud Storage with backend API interfacing.
- **Malahat Nation (Archistar)**
  Integrates open GIS layers, environmental datasets, infrastructure mapping, and digital codes within a unified cloud environment. Supports interoperability through structured data formats, APIs, and automated compliance logs.
- **Multi-Micro (Arno Matis Architecture)**
  Leverages ISO 19650, openBIM standards, and Common Data Environments (CDEs) to enable structured data exchange across municipal departments and external partners. Integrates BIM files, digital rulesets, and metadata through interoperable APIs.
- **Naikoon (Flying Factory)**
  Uses common BIM and DfMA tools and a cloud-based CDE to structure panel, production, and QA data consistently, defining prefabrication data standards and schemas that can be exposed through future APIs.
- **Nak'azli (Mass Timber Housing Kit)**
  Integrates design, costing, and fabrication data in one model, keeping all information aligned through design and production to improve transparency around sourcing and assembly.
- **Perkins & Will (Urban Timber Modular Housing)**
  Establishes a platform and manufacturer-agnostic ecosystem supporting transparent data-sharing and future integration with digital permitting or compliance systems through BIM models, parametric configurators, and performance datasets.
- **Wesgroup (Digital CFS Wall Panel Manufacturing)**
  Links digital drawing model twins with automated roll-forming production, enabling digital project and manufacturing analytics.

PILLAR 4

## OBJECTIVE

Create transparent and equitable governance models that steward standards, coordinate pilots, resolve disputes, and ensure sector-wide benefit from digital transformation.

## ACTION

Establish a Digital Housing Governance Council to steward standards, coordinate pilots, and resolve disputes. Develop province-wide data standards, common data environments (CDEs), and open APIs that enable transparent, accountable, and inclusive decision-making, while supporting real-time reporting, streamlined information sharing, and robust analytics across the sector.

## IMPACT

Ensures consistent application of standards, strengthens cross-sector collaboration, and supports the stable evolution of digital infrastructure (BC Ministry of Housing, 2025b). Transparent dashboards build public confidence, while knowledge-sharing platforms accelerate learning and the adoption of best practices across the sector.

# Governance & Inclusion

Put clear, inclusive governance around digital housing standards and decisions.

## HGI PROJECTS IN ACTION

- **Buildblox (Modular ERP)**
  Adopts open standards like OpenBIM (IFC) to ensure full workflow transparency, making project data accessible to all stakeholders—from suppliers to permit issuers—without requiring proprietary software licenses.
- **Radical I/O (ClarityBC)**
  Engages cross-jurisdictional councils for collaborative digital policy shaping and adoption; involves municipal partners in survey creation and reporting to build shared understanding.
- **Cloudpermit (Inspector AI)**
  Establishes transparency dashboards and reporting for municipal and provincial authorities, enabling evidence-based decision-making.
- **Malahat Nation (Archistar)**
  Leverages interactive digital planning models, co-design workshops, and version-controlled cloud workspaces enabling community leadership to guide decisions. Shared geospatial and design datasets create transparent, inclusive governance processes.
- **Multi-Micro (Arno Matis Architecture)**
  Establishes standardized roles and responsibilities within a CDE framework, enabling transparent collaboration between architects, engineers, and municipal reviewers. Supports governance models ensuring consistent use of BIM data and accountable digital decision-making.
- **Naikoon (Flying Factory)**
  Co-designs governance, partnership, and licensing models for Flying Factories with Indigenous partners and SMEs, creating replicable frameworks for how multiple organizations share IP, capacity, and accountability.
- **Perkins & Will (Urban Timber Modular Housing)**
  Creates transparent, multidisciplinary collaboration across architecture, engineering, computational research, and supply-chain partners, sharing methods, design rationale, and performance findings to support sector-wide adoption.
- **Wesgroup (Digital CFS Wall Panel Manufacturing)**
  Offers collaborative digital templates designed for supply chain integration and partner access.

PILLAR 5

## OBJECTIVE

Create confidence in digital systems through certification, auditability, transparent ML models, and real-time performance dashboards.

## ACTION

Pilot service provider certification programs, automated audit trails, and public dashboards to increase transparency, clarify expectations, and reduce risk for municipalities and homeowners. These mechanisms build confidence through validated processes and clear accountability frameworks.

## IMPACT

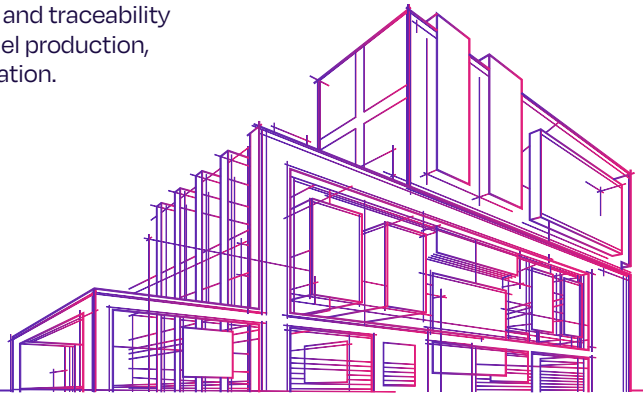
Reduces municipal risk, increases public confidence, and provides clear, verifiable pathways to compliance (Dubai Municipality, 2022). Trust and certification mechanisms, supported by real-time dashboards and audit trails, enhance accountability and make compliance transparent for all actors in the housing system.

# Trust, Certification & Transparency

Build confidence in digital tools through certification, audit trails, and dashboards.

## HGI PROJECTS IN ACTION

- **Buildblox (Modular ERP & Supply Chain)**
  Scales real-time modular certification pilots, delivers audit dashboards, and supports secure digital audit trails for all projects. Transparent ML methodologies and compliance logs build user confidence.
- **Cloudpermit (Inspector AI)**
  Employs transparent machine learning methodologies understandable to users, aligned with established and emerging industry standards. Creates compliance audit logs and open platform integration.
- **ETRO (Prefab Cassettes)**
  Implements factory tracking, quality assurance, and digital process certification, creating transparent pathways for modular component approval.
- **Kelowna Fast Track Middle Density (mddl)**
  Streamlines pre-approved compliance for modular plans, leveraging digital validation for permitting flows. Pre-approved designs reduce uncertainty and build confidence.
- **Multi-Micro (Arno Matis Architecture)**
  Applies predefined digital audit criteria, automated drawing validation, and structured BIM quality checks to increase reliability. Transparent, machine-readable outputs help reviewers verify compliance.
- **Naikoon (Flying Factory)**
  Implements digital QA and traceability for panels and factory processes through digital job travelers, QR-coded panels, and electronic QA forms, creating an auditable trail from design to installation.
- **Nak'azli (Mass Timber Housing Kit)**
  Documents locally sourced and certified timber with documentation of materials and processes, creating repeatable, verifiable methods for future Indigenous-led manufacturing.
- **Perkins & Will (Urban Timber Modular Housing)**
  Builds confidence through validated structural, mechanical, and fabrication strategies; LCA and performance evaluation; and engagement with regulatory authorities.
- **Wesgroup (Digital CFS Wall Panel Manufacturing)**
  Operates digital inventory and traceability for steel stud and wall panel production, supporting offsite certification.



PILLAR 6

## OBJECTIVE

Ensure that digital transformation benefits every community, in particular rural, remote, and Indigenous communities, by providing accessible tools, training, and pre-certified templates.

## ACTION

Prioritize underserved communities in funding and support by providing pre-certified, open-source templates and accessible training. Ensure digital tools are affordable, interoperable, and easy to adopt for communities of all sizes, including small, rural, and Indigenous communities.

## IMPACT

Prevents a digital divide and promotes province-wide access to modern construction tools and digital capabilities (BC First Nations Housing & Infrastructure Council, 2024). By providing advanced tools, open-source templates, and targeted capacity-building support, all communities—including rural, remote, and Indigenous—are better positioned to benefit from faster, more efficient housing delivery.

# Equity & Regional Support

Ensure every community benefits from digital transformation, not just large centres.

## HGI PROJECTS IN ACTION

### Buildblox (Modular ERP)

Subsidizes SME and rural onboarding, ensuring tool access for small manufacturers and outlying communities. Cloud infrastructure removes technical barriers.

### Radical I/O (ClarityBC)

Includes municipalities and regional districts across the province—including rural and northern regions—in digital permitting modernization. Provides a starting point for potential expansion to include First Nations.

### Cloudpermit (Inspector AI)

Provides tools accessible to smaller jurisdictions, ensuring digital compliance and permitting benefits are distributed provincially.

### Kelowna Fast Track Middle Density (mddl)

Supports infill development and capacity-building for communities of all sizes. The platform is flexible, with data and eligibility layers decoupled, allowing the same underlying dataset to show eligibility under different policies. Accessible pricing removes barriers.

### Malahat Nation (Archistar)

Delivers accessible digital planning tools, reusable templates, and interoperable GIS-based workflows designed for small, rural, and Indigenous communities. Cloud infrastructure and parametric models ensure advanced digital capabilities without local technical overhead.

### Naikoon (Flying Factory)

Demonstrates a mobile, containerized factory model with digital templates and training pathways designed for small, remote, and Indigenous communities and local SMEs. Supports equitable scaling of digital and manufacturing capacity province-wide, not just in major urban centers.

### Nak'azli (Mass Timber Housing Kit)

Indigenous-led innovation demonstrating how digital tools can be adapted to rural and Indigenous contexts, using local materials and creating local jobs. Scalable, affordable home kits can be produced locally using available timber.

### DASH Platform

Provides free, open-access standardized designs that level the playing field for smaller municipalities and developers, ensuring all communities benefit from digital innovation.

### Perkins & Will (Urban Timber Modular Housing)

Develops scalable and adaptable systems suitable for diverse urban and regional conditions in BC. Focuses on non-proprietary components, enabling local manufacturing participation and supporting communities with consistent, high-quality, lower-carbon housing.

### Wesgroup (Digital CFS Wall Panel Manufacturing)

Delivers interior prefabricated wall panel kits for cost-effective, regionalized manufacturing, lowering barriers for small construction markets.

# Appendix B

## SECTOR INSIGHTS — WHAT WE HEARD

The *Breaking Silos: BC Building Code and Digital Integration 2025* workshop and follow-up engagement surfaced essential sector perspectives and underlined the need for a coordinated, incremental approach.

### Fragmentation and standardization

*Challenge:* Permitting processes, data definitions, and digital infrastructure differ significantly across BC, commonly referred to as the "iceberg of digital transformation"—where visible technology is only a small part, and legacy practices, regulatory inconsistencies, and siloed infrastructure lurk beneath (BC Ministry of Housing & Municipal Affairs, 2025).

### Digital tools and smart systems

*Insight:* Digital permitting, AI-driven compliance, and Building Information Modeling (BIM) are showing tangible benefits for workflow efficiency, transparency, and collaboration.

### Capacity, equity, and change management

*Challenge:* Smaller, rural, and Indigenous communities, as well as many builders, struggle with resources, skills, and infrastructure to participate fully in digital transformation.

> **"Digital readiness is the privilege of large jurisdictions; if we don't level the playing field, we'll simply widen the gap."**
>
> Workshop participant, 2025

### Governance, collaboration, and accountability

*Observation:* Sustained, system-wide change hinges on robust governance, stakeholder coordination, and public-private-academic partnerships.

> **"Lasting change will only come from enabling innovation by others—not through top-down mandates, but by getting the foundation right."**
>
> Workshop participant, 2025

There is broad agreement across sectors: shared digital infrastructure, consistent data, and collaborative governance are essential for progress.

# Appendix C

## HOUSING GROWTH INNOVATION (HGI) PROGRAM — PORTFOLIO SUMMARY

### ACTIVE HGI PROJECTS

**Buildblox** Modular ERP and supply chain platform

Enhancing modular housing delivery with an integrated ERP and supply chain platform that boosts operational efficiency and real-time transparency for manufacturers and builders.

**ClarityBC / Radical I/O** Municipal digital readiness for housing permits

Assessing BC municipalities' digital readiness to streamline housing permitting, clarify current systems and processes, and identify opportunities to accelerate approvals.

**Cloudpermit** InspectorAI smart inspections assistant

Using AI-powered smart inspections to predict code issues, automate routine inspection tasks, and modernize regulatory processes for new housing development and compliance.

**ETRO** Prefabricated washroom cassettes pilot

Piloting modular prefabricated washroom cassettes to speed construction, reduce costs, and ease pressure on BC's constrained skilled labour pool.

**Kelowna Fast Track Middle Density (mddl)** Scaling middle housing in BC

Using GIS-based lot identification and permit-ready plans to unlock multi-unit potential and de-risk rental development on existing single-family lots.

**Malahat Nation** Archistar 3D generative design for Indigenous planning

Pioneering the first 3D generative design–driven master planning for housing in North America to transform Indigenous community housing design and approvals.

**Multi-Micro / Arno Matis Architecture** Automated BIM compliance review

Deploying a BIM-driven software solution that uses dynamic building data to automate regulatory and bylaw compliance review.

**Naikoon / Flying Factory** Mobile production automation feasibility

Advancing a "Flying Factory" model for modular prefab manufacturing with digital traceability to enable mobile, automated delivery of prefabricated housing.

**Nak'azli Development Corporation** Mass timber housing kits

Delivering mass timber home kits that demonstrate regionally integrated mass timber production on First Nations land and support Indigenous-led housing delivery.

**OK Laminators** CFS/CLT hybrid structural design tool

Developing a free pre-design tool to streamline and innovate cold-formed steel/cross-laminated timber hybrid structural systems for housing.

**Perkins & Will** Urban timber modular housing systems

Scaling prefabricated timber housing systems to provide repeatable, modular urban solutions that directly address persistent housing supply gaps.

**Wesgroup** Steelwrks digital CFS wall panel manufacturing

Modernizing cold-formed steel wall panel construction with digital manufacturing to deliver precision-fabricated components for faster, higher-quality housing projects.

# References


BC First Nations Housing & Infrastructure Council. (2024).
*https://www.fnhic-bc.ca/*

Digital Tools for Community-Driven Development. BC Ministry of Housing. (2024a).
*https://chbabc.org/bc-government-announces-new-one-stop-provincial-permitting-strategy*

Permit Modernization Strategy Briefing. BC Ministry of Housing. (2024b).
*https://news.gov.bc.ca/releases/2023WLRS0003-000033*

Municipal Digital Capacity Initiative Briefing Note. BC Ministry of Housing. (2024c).
*https://www2.gov.bc.ca/assets/gov/housing-and-tenancy/tools-for-government/local-governments-and-housing/lghi_capacity-funding-scope-guidelines.pdf*

Permit Hub Initiative – Project Overview and Pilot Evaluation. BC Ministry of Housing. (2024e).
*https://news.gov.bc.ca/releases/2024HOUS0028-000817*

Minister Kahlon public remarks on housing delivery and permitting. BC Ministry of Housing. (2025a).
*https://news.gov.bc.ca/releases/2024HOUS0028-000817*

BC Building Code Digitization Technical Update. BC Ministry of Housing. (2025b).
*https://news.gov.bc.ca/releases/2024HOUS0028-000817*

Strategic Framework for Digital Housing Transformation. City of Vancouver. (2024).
*https://vancouver.ca/your-government/in-depth-strategy.aspx*

Digital Permit Transformation Strategy: Smart Rules and Self-Serve Compliance. Dubai Municipality. (2022).
*https://www.dubai92.com/news/uae/dubai-launches-unified-platform-for-building-permits/*

Unified Digital Permitting Platform and Service Provider Certification Framework. European Commission. (2023).
*https://cordis.europa.eu/project/id/101056973/reporting*

ACCORD: Automating Code Compliance Checking Frameworks. International Organization for Standardization. (2018).
*https://cordis.europa.eu/project/id/101056973/reporting*

*ISO 19650: Organization and digitization of information about buildings and civil engineering works. National Research Council Canada. (2023). Roadmap to Digitalization in Canada's Construction Sector.*
*https://www.iso.org/standard/68078.html*

## DIGITAL

DIGITAL connects technology builders and buyers to accelerate the adoption and commercialization of Canadian solutions.

Established in 2018 under the Government of Canada's Supercluster Initiative, DIGITAL brings together industry leaders, SMEs, and post-secondary institutions to collaborate on large-scale projects that drive innovation and the development of technology solutions in sectors critical to Canada, such as mining and energy, housing, workforce development and health.

Since inception, DIGITAL has delivered billions in projected revenue for Canadian companies, retained sovereign IP, launched hundreds of commercial products, and helped tens of thousands of Canadians gain the skills needed for the digital economy.

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Amy Vilis is a recognized leader at the intersection of technology, housing, and social impact. As Director of the Housing Growth Innovation (HGI) program at DIGITAL, Canada's Global Innovation Cluster for digital technologies, she leads efforts to modernize housing production through advanced technologies. Under her leadership, HGI brings together industry, government, and community partners to pilot and scale digital solutions across the housing sector. Her expertise includes digital transformation, off-site construction, AI-driven planning, and workforce development. Amy is the creator and host of *Blueprint for Growth: Innovation in Housing*, a Quill Award–winning podcast, and a sought-after voice on housing and tech. She holds an MBA from Royal Roads University and is passionate about driving systems-level change through bold, collaborative innovation.

## VALIDATOR

*This mission brief was reviewed for strategic alignment with Housing Growth Innovation Program's objectives by Clearwater Partners.*

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