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Stacked

Modular midrise housing, Vancouver, Canada

Main authors

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Project data

Project group:	Architecture, building and civil engineering
Client:	James Ko, Kozy Development Inc.
Project background:	Private investment
Planned start:	April 2018

Summary and appraisal of the project by the jury

To provide affordable housing, the proposal introduces a midrise, mixed use building type. The project is part of a longer study by the authors to improve the economic and spatial models for affordable housing. The adaptable timber panelized construction allows for versatility in unit layouts and the building mass, creating a variegated expression. The project achieves net zero energy through a high insulation value together with geothermal heating and cooling. Through flexibility, the proposed system empowers residents to invent their own future.

The jury was impressed by the comprehensive, construction-based approach. By focusing on streamlining the building process, the proposal is able to merge sustainability with affordability. The question it addresses is a crucial one in many cities across the region: how to provide sustainable, affordable housing in high-value urban areas. It does so through a careful examination of housing's basics: aggregation, modularity, and scalability. This approach is further strengthened by its focus not just on components but systems and its concentrated effort to strive for net zero energy. The project's methodology that makes high quality, affordable housing a question of both engineering and spatial quality is a powerful claim.

Image 1: Platforms For Life – Transferability and making of a socially viable environment. The proposed buildings bring significant density and micro communities to urban infill sites, as small as a single family house lot, providing an alternative scale (the missing middle) of medium density development while counteracting the typical dichotomy between high rise and low rise low density living. The building is designed to create transitional massing to mediate scale while catalyzing community.

Statements on the sustainability of the project by the authors

People – A Platform for the empowerment of people and communities
Rampant urban development has led to a highly formulaic, repetitive and inadequate one-fits all housing stock with segregated communities. Most developments are environmentally, socially and culturally unsustainable and unaffordable. How do we create housing that provides desirable homes, not units, with high quality livability, integrated living communities, sustainable regenerative ecologies, both in terms of material and energy resources, while improving affordability?
Platform for Life is a (re)generative housing system that can accommodate the evolving needs of individuals, families and communities, and is sufficiently flexible to empower people and communities to invent their future. Parametrically driven, the approach is based on choice, adaptability and participatory design.

Planet – EcoSystem – A performance driven platform focusing on renewable resources
The "EcoSystem" is based on the predominant use of renewable materials. Cross-Laminated-Timber (CLT) panel is the primary material for the platforms cluster and structural system. It has been engineered to allow for structures up to 12 floors, built from panelized open spatial modules. The material and panelization is ideal to combine renewable resources with state of the art CNC/Robotic precision fabrication. Equally the focus is on minimizing heat loss and cooling requirements through Passive House design (and certification) with a highly airtight prefabricated building envelope, allowing for close to net zero performance and LEED V4 Platinum compliance. The building will be delivered under the City of Vancouver's Rental100 affordable housing program.

Innovation and Prosperity - adaptability, scalability and transferability
Platform for Life's uniqueness is based on the combination of a parameter based design systems platform, providing certainty while enabling mass customization. We continue to develop the software engine that allows the exploration a multiplicity of scenarios, providing feedback for livability, environmental performance and critical project data. The technology allows us to embrace a direct design-to fabrication and systematic prefabrication process. The cluster presents a simple, clear, systematic model: an innovative design concept that fully integrates materials and methods, structure, enclosure and mechanical systems. As an open evolving platform it adapts to the opportunities of societal technological change, while offering adaptability, scalability, transferability and certainty.

Image 2: How can we synthesize and manage the complexities required of a system with the objective to co-evolve with the forces of societal change in order to create buildings with lasting usefulness while overcoming the complete risk averseness and resulting lack of innovation in development, planning, financing and construction? Through synthesis, digital parametric control and platform systems technology we are creating choice and predictability where there are typically one-offs and uncertainty.

Further authors

Martina Caniglia, architect, and **Ryan Gillespie,** technologist, LWPAC + Intelligent City; **Thomas Bocahut,** architect, **Jenny Lee,** designer, and **Mingyue Zhang,** architect, LWPAC; all Vancouver, Canada

Image 3: Proposed MONAD_R prototype – to be built – City of Vancouver's Rental100 affordable housing program.

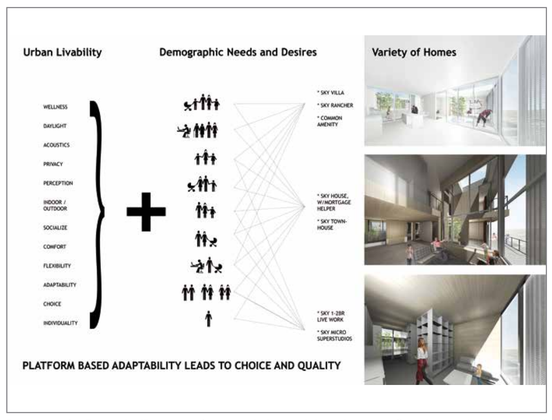

Image 4: People/Innovation – Adaptable cluster for broad range of homes and community functions.

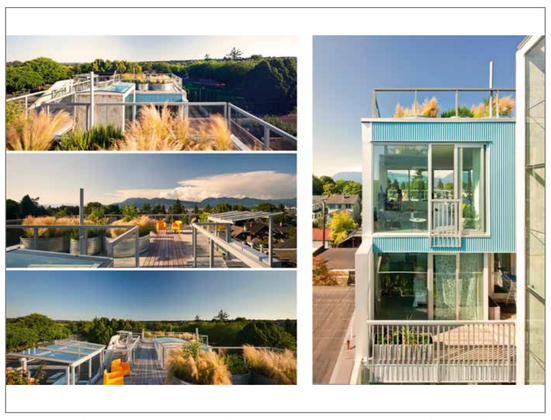

Image 5: Community – Redefined courtyard typology with vertical gardens – Community Roofs + Urban.

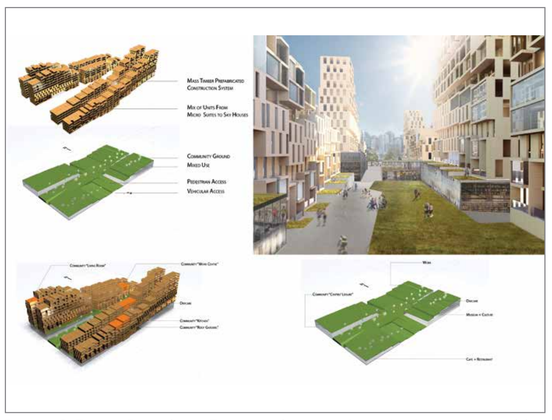

Image 6: Future Iteration – Empowering people and urban communities with broadly shared infrastructure.

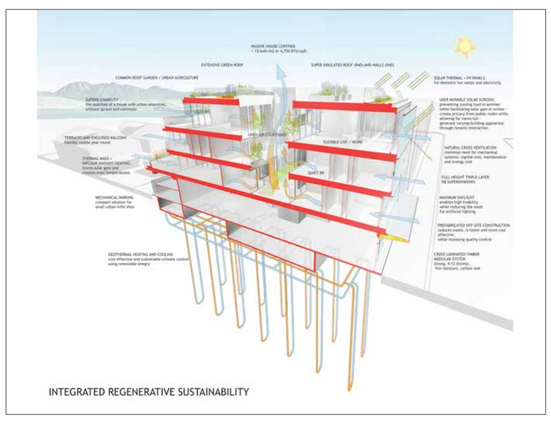

Image 7: Planet – Eco-Sys – Renewable energy, net zero and passive house.

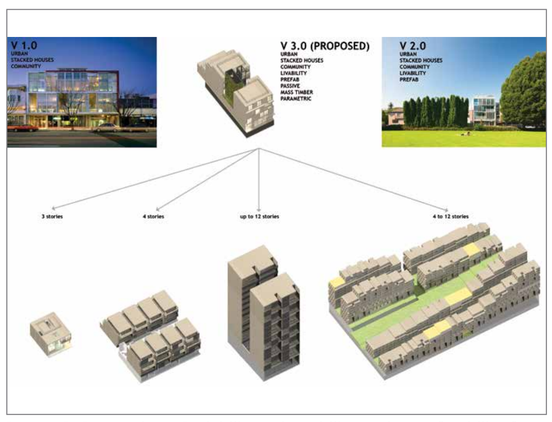

Image 8: Prosperity – Scalability, adaptability and transferability from 3-12 stories and 10-100m lot width.

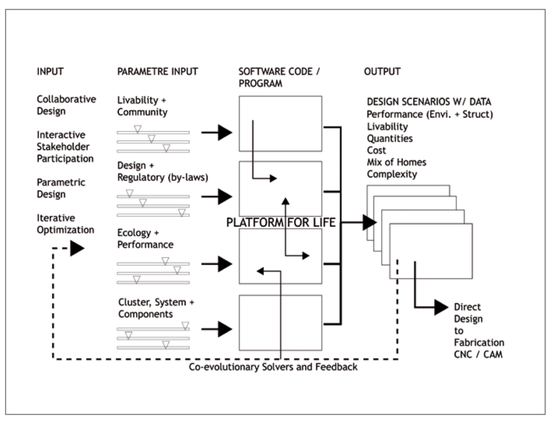

Image 9: Innovation – Creation of software program for interactive parametric direct Design-to Fabrication.

Image 10: Innovation – EcoSys – Adaptable prefabricated cluster components using machined mass timber panels.