

# Sydney Alternative Housing Challenge

**NILOU VAKIL**

University of Kansas

Data is becoming as impactful on the way we configure cities as water and electricity were 100 years ago. The high-speed, low-latency internet of Smart Cities allows our built environment to respond to our needs in exciting ways. The connectivity of sensors, devices, and our urban environments through the Internet of Things require a re-examination of the role architects, urban designers, planners and developers can play in data-driven cities.

This urban design project will illustrate the team's design submittal to the 2019 Sydney Alternative Housing Ideas Challenge and the process utilized to develop the scheme through workshops. The team consists of the University of Kansas School of Architecture and Design's Institute for Smart Cities and architecture firm, in situ DESIGN. Joe Colistra, Nilou Vakil, Gregory Crichlow and Casey Franklin were members of this team.

"The aim of the Alternative Housing Ideas Challenge is to prioritize development models that could be replicated across the local government area and beyond, to enable a broader range of affordable housing options to be considered and delivered. The challenge will help to inform the development of the council's future Community Strategic Plan and Housing Policy."<sup>1</sup>

"The shortlisted entries were whittled down from more than 230 as part of the international challenge, which invited housing ideas in the areas of financing, design, building, ownership and management."<sup>2</sup> Named one of seven collective winners, "Smart Home Sydney" introduces innovative, affordable and sustainable housing and neighborhood models. The design proposes an investment corridor through Sydney's major downtown artery, George Street, that utilizes data collection systems to deploy population health initiatives. Housing unit



Figure 1. Downtown Sydney, University of Kansas, Institute for Smart Cities.

**ALTERNATIVE HOUSING IDEAS CHALLENGE**  
 The search for integrated social equity.  
**CITY OF SYDNEY**  
 30





Figure 2. Smart housing prototype constructed in the University of Kansas Design Build Lab.



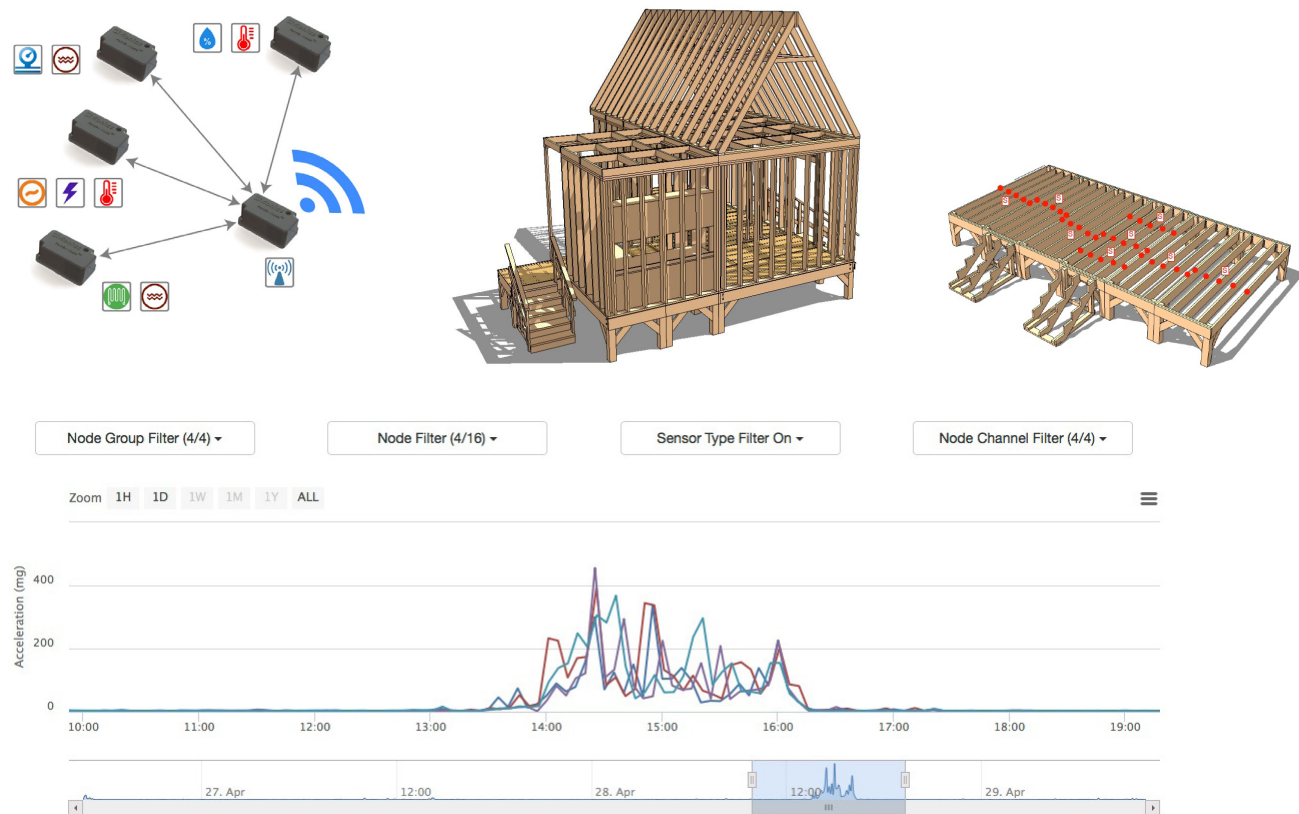


Figure 3. Data collected from sensors embedded in the floor joists analyzing the gait of the resident.

designs that incorporate smart home technology as well as proposals for financing and policy to deploy such technology are also discussed. Buildings embedded with synchronized technologies are made feasible and scalable through advanced manufacturing techniques and prefabrication. Lifelong neighborhoods are evolved that allow one to thrive at all stages of life. They incorporate parks, schools, access to multi-modal transit, jobs, cultural districts, and all the amenities needed in later life.

Walkable districts are designed with health and wellness in mind. Buildings are organized to support vibrant streets that hold individual car use as secondary and focus attention on walkable, bikeable neighborhoods. Housing units are designed to collect activity and biometric data and transmit this information to an on-site clinic or Living Lab, shown in figures 2,3,4. These environments are able to collect human vital signs, physical activity, environmental conditions, and pharmaceutical regimens. This data can be collected and analyzed by different apps to deploy Population Health strategies to deliver healthcare more affordably, effectively, and sometimes before we know we need it.

The technological capability provided by the clinic allows the housing operator to leverage institutional resources by leasing

space to university centers or medical research entities. The rental rate far exceeds comparable rates for similar commercial facilities thus subsidizing the housing costs, technology upgrades, and even net zero energy construction.

During widespread pandemics, the integration of the built environment with data collection technologies will more than ever evolve cities, change social interactions and provide people with health care systems. In the beginning of the coronavirus pandemic Steven Holl writes “Architecture should embrace our codependence. Buildings can make us more aware of the ways in which we are globally connected.”<sup>3</sup> Currently we are aware that “the pandemic’s impact on urbanism has shown up in small changes that can be implemented faster than a new building or zoning plan.”<sup>4</sup>

This project will not only describe the housing prototype, but will also outline the innovative competition process. Unlike many solution-based housing competitions, the seven collective winning teams which were consist of architects, urban designers, developers, financiers, property owners and city planners were invited to participate in a series of workshops to engage with one another. The workshops included the Sydney government, and the community to develop their ideas into implementable solutions for Sustainable Sydney 2030 Master

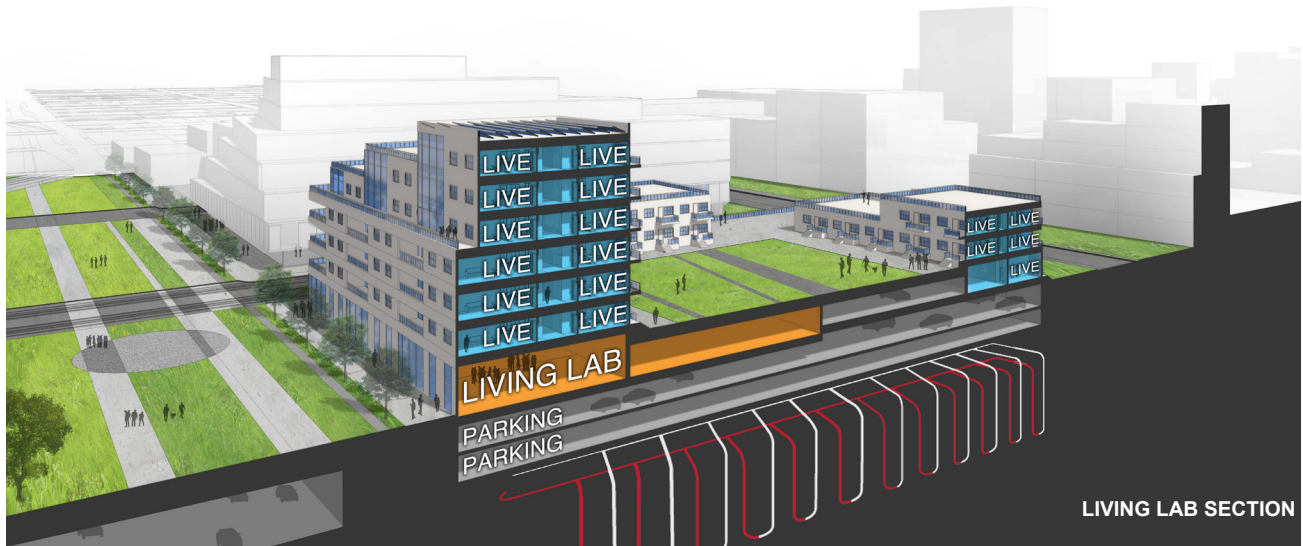


Figure 4. Living Lab Section, University of Kansas, Institute for Smart Cities.

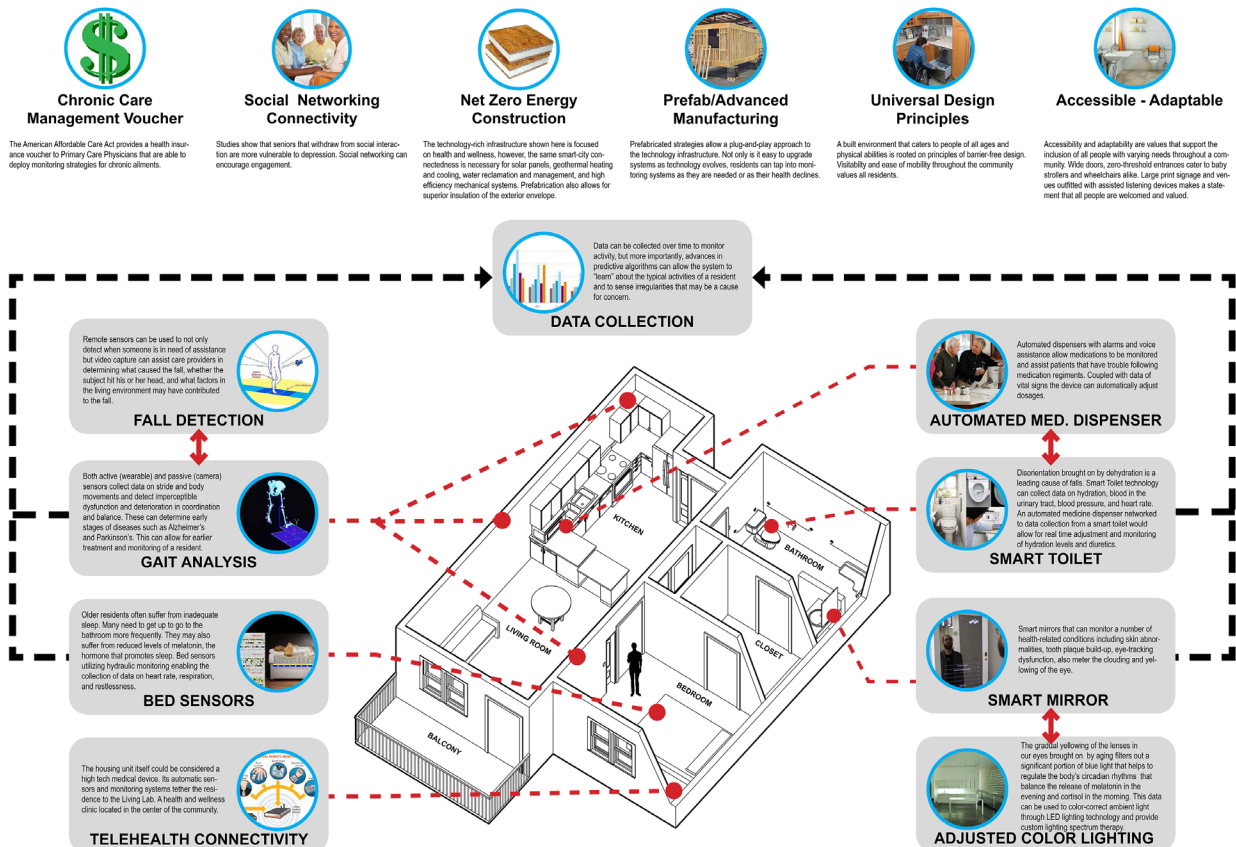


Figure 6. Data Connectivity Residential Prototype. University of Kansas, Institute for Smart Cities.

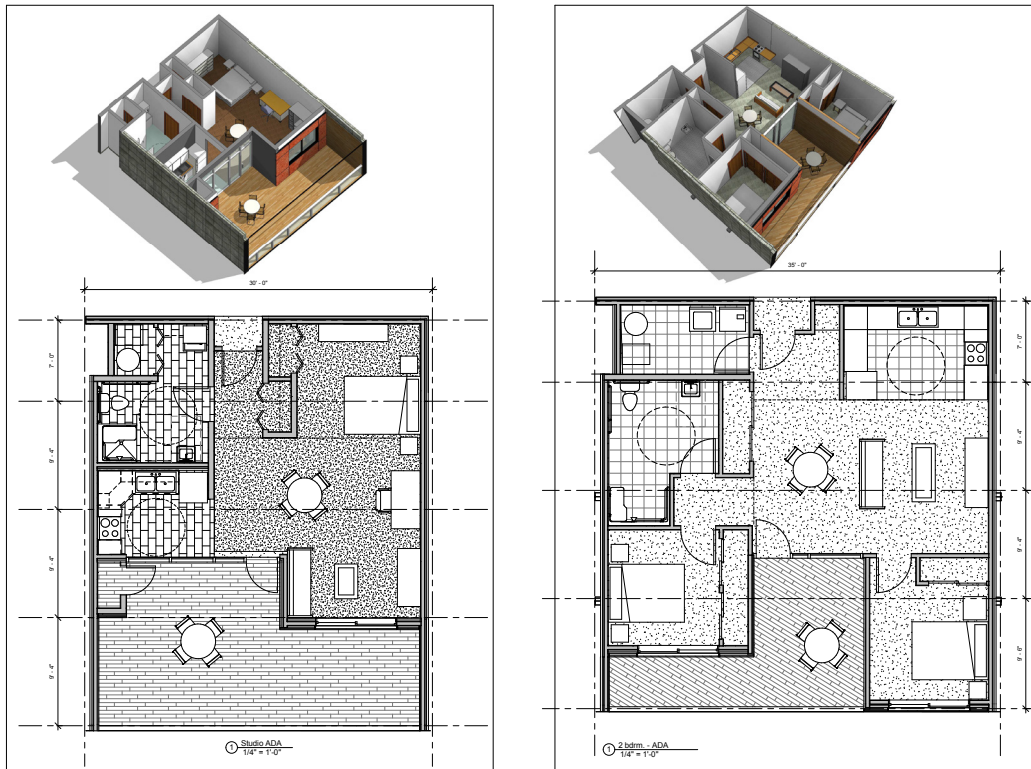


Figure 7. Affordable Housing Unit Prototypes, University of Kansas, Institute for Smart Cities.

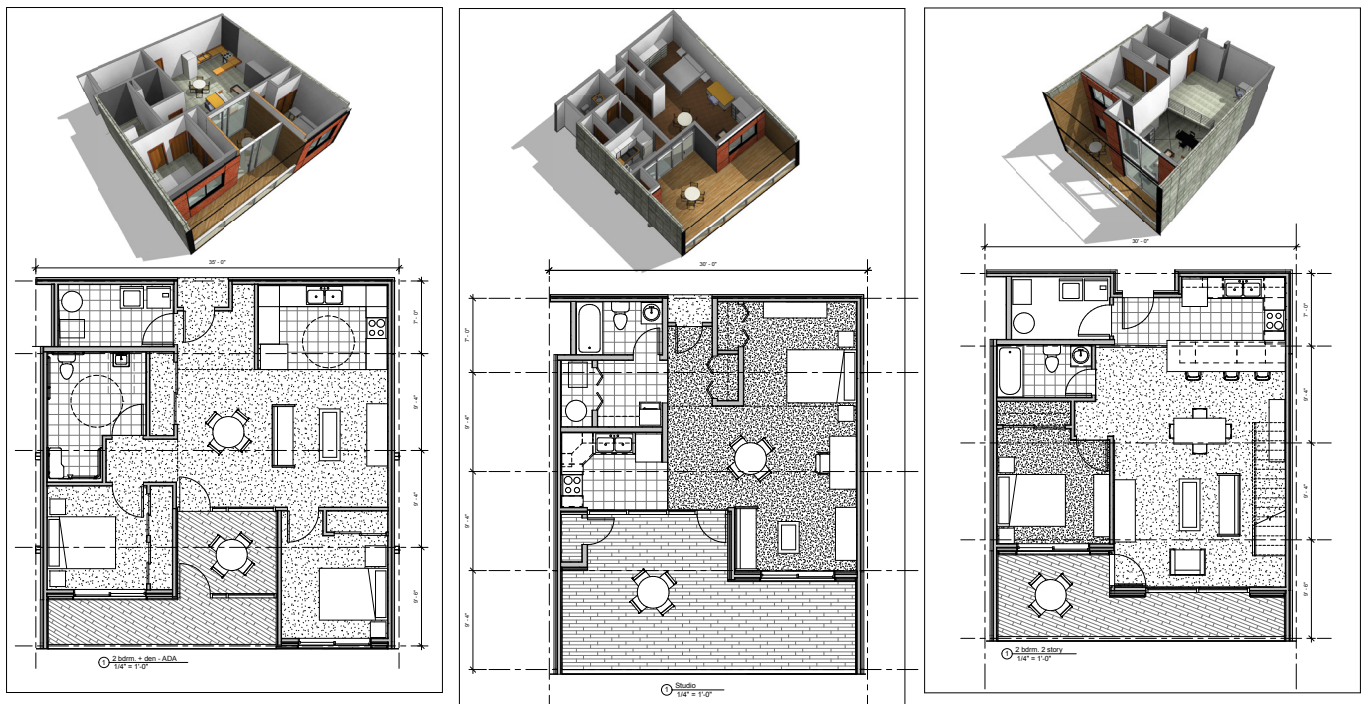


Figure 8. Affordable Housing Unit Prototypes, University of Kansas, Institute for Smart Cities.

Plan. The participatory collaboration of this ideas competition was so unique that it was presented in Sydney 2019 Annual Architecture Festival. “As part of the Sydney Architecture Festival, the 7 shortlisted teams gave us insight into the ideas and the inspiration behind their work. The presentations were followed by a panel discussion of experts considering what the future of housing could look like.”<sup>5</sup>

Device connectivity afforded by high-speed internet is critical to the proposal, however, one of the scheme’s main goals is to foster social connectivity and supporting intergenerational living. Use of mobile apps that connect residents in much the same way that social media can, however, bluetooth beacons incentivize sustainable behavior while facilitating human interaction. Various mobile apps allow primary caregivers to monitor family members and intervene when necessary. This alternative housing ideas competition is meant to facilitate prototypical designs that can be repeatable throughout Sydney.

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#### ENDNOTES

1. <https://architectureau.com/articles/city-of-sydney-launches-alternative-housing-ideas-competition/>.
2. <https://www.cityofsydney.nsw.gov.au/vision-setting/alternative-housing-ideas-challenge>.
3. Chayka, Kyle, Astra Taylor, and Tamar Adler. “How the Coronavirus Will Reshape Architecture.” *The New Yorker*. Accessed
4. <https://www.newyorker.com/culture/dept-of-design/how-the-coronavirus-will-reshape-architecture>.
5. <https://www.cityofsydney.nsw.gov.au/vision-setting/alternative-housing-ideas-challenge>.