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How AI and Blockchain will revolutionise housing

- Secure 'blockchain' technology can lead to property owners selling small shares of that property, attracting micro investors, and thereby creating greater liquidity of real estate assets.

- Machine learning algorithms are arguably becoming sophisticated enough to automate much of the statutory land use planning process.

- Using automated systems may improve housing welfare assistance but can have limitations (as demonstrated by the Centrelink 'RoboDebt' scandal).

- New technologies using big data sets may also pose a threat to social inclusion, by facilitating market-based discrimination against vulnerable groups.

- In light of the pros and cons associated with these technological changes, more work must be done to improve data standards, privacy standards, and data collection and use protocols across government, industry and the non-profit sectors.

With Australian housing prohibitively expensive for so many, emerging blockchain technology could enable property development to be crowdfunded. This would enable micro investors to own small parcels or shares in the development, whilst providing those investors with real-time information to help them make the best investment decisions. This could help some investors to enter the property market for the first time, but will also likely contribute to further price inflation, exacerbating affordability issues for those seeking to buy an entire property.

This is just one of many potential disruptions to the housing market examined in a newly released AHURI report, '*Understanding the disruptive technology ecosystem in Australian urban and housing contexts: a roadmap*', undertaken by researchers from UNSW Sydney, RMIT University, and Swinburne University of Technology. It provides a wide-ranging and critical review of how different emerging digital and disruptive technologies are being incorporated into the housing, housing welfare and planning systems, and how they might lead to greater efficiencies and new opportunities, but also create new challenges and complexity.

Professor Christopher Pettit, from the University of New South Wales and lead author of the report, says, 'The promise of some of these emerging technologies is that they have the potential to simplify the processes involved in siting, constructing, tenanting, selling and maintaining properties. This simplification may come through automated contracts; access to large databases of information that can predict changes in a geographical area; or tracking the housing careers of people receiving housing benefits.'

In the urban planning sector, machine learning algorithms, which are capable of analysing long-term data gathered from planning decisions across Australia, may soon be sophisticated enough to automate much of the statutory land use planning process. Capacity now exists for digital planning systems to do initial assessments of planning proposals, particularly for smaller developments, which – with the proper oversight in place - could vastly improve the efficiencies of the planning process.

However, as the report details, these emerging disruptive technologies can have huge impacts on the housing and associated legal systems. While much work has been done in opening up property data assets, significant work is required on data standards, privacy standards and protocols for data sharing across government, industry and the non-profit sectors.

'Having tenants' data readily available may potentially disadvantage vulnerable individuals in the private rental market', says Professor Pettit. 'Particularly if they had trouble keeping up with rental payments due to unstable employment, or if they have special needs, such as grab rails and level access that may require some modification to the dwelling, that some landlords may discriminate against.'

While automated systems offer the promise of reducing costs and increasing efficiency, they raise legal and ethical concerns. Government automated decision making systems that allocate welfare may result in unfair outcomes, as demonstrated by the recent Centrelink 'RoboDebt' scandal. Additionally, reputation-based selection may pose a threat to social inclusion, as only those who meet various standards will be automatically included in a category. For example, one Australian company is using a score based on social media data to cover the cost, for a fee, of housing bonds for those applicants seen as a 'good online citizen'.

The report can be downloaded from the AHURI website at
https://www.ahuri.edu.au/research/final-reports/304

Professor Christopher Pettit will present findings from the research at the upcoming AHURI one-day conference '*Disrupting the housing market'*, taking place in Hobart at the Hotel Grand Chancellor on Tuesday 4 December 2018.

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