Navigating Digital Transformation: A Multi-Level Perspective Analysis of New Zealand's Cadastral Reform and Lessons for South Africa

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SUMMARY

The South African cadastre, a hybrid system with paper-based foundations and digitised components, faces significant challenges including tenure exclusivity, poor accessibility, and siloed land information. In response, the South African government is pursuing a transition to a fully digital e-cadastre; a complex socio-technical endeavour that extends beyond mere technological adoption. While numerous international case studies document cadastral digitalisation, this research focuses specifically on New Zealand's Landonline as a globally recognised exemplar of successful reform.

The study employs the Multi-Level Perspective (MLP) as its primary analytical framework. The socio-technical transition theory of MLP is used to analyse systemic change through the interaction of three levels: the exogenous Landscape (macro-trends), the established Regime (dominant rules, practices, and technologies), and the innovative Niche (protected spaces where novelties emerge). This framework facilitates understanding beyond a simplistic technical narrative to reveal the dynamic interplay of political, economic, environmental, and social factors that enable or constrain change.

The MLP analysis revealed that New Zealand's e-cadastral transition was not a simple deterministic outcome of technological progress. Instead, it was the product of a complex interplay between macro-level landscape pressures, the cultivation of protective niches, and the eventual reconfiguration of a deeply entrenched socio-technical regime. A confluence of landscape pressures, primarily sweeping neoliberal political-economic reforms and the unique geophysical demands of a dynamic tectonic environment, created a 'window of opportunity' by destabilising the old paper-based system. This window was exploited by niche-level innovations, such as the NZGD2000 datum, the LandXML standard, and the Landonline platform, which were nurtured

within protective spaces through strategies such as pilot projects, phased governance, and embedded stakeholder representation. Ultimately, these innovations succeeded in reconfiguring the entire regime, replacing decentralised, manual practices with a centralised digital system. The new system was characterised by automated validation, a client-centric ethos, and a new devolution of responsibility onto accredited professionals. However, this new digital regime has its own internal tensions and forms of inertia, particularly between the need for rigid, computable rules and the nuanced reality of cadastral surveying.

Building on this analysis, plausible transition pathways for a South African e-cadastre are examined by systematically contrasting the South African context—with its distinct challenges of social tenure inclusion, institutional siloes, and a different political landscape—against the New Zealand case. This study delineates specific opportunities, constraints, and strategic leverage points that can inform South Africa's digital cadastral strategy and contribute to both global and African land administration discourse.