FIG WORKING WEEK 2025
AND Locate25 THE NATIONAL GEOSPATIAL CONFERENCE
Collaboration, Innovation and Resilience: Championing a Digital Generation
FIG Geospatial Council of Australia
Brisbane, Australia 6–10 April

Towards A Fit-For-Future Cadastral System For Jamaica: A Socio-Technical Approach

Wayneworth G. Hamilton
Senior Director Surveys & Mapping Division
National Land Agency - Jamaica

ORGANISED BY FIG Geospatial Council of Australia
PLATINUM SPONSORS Australian Government CHCNAV esri THE SCIENCE OF WHERE Leica Geosystems HD Meter Surveyors Australia

Background

- The Jamaican reality requires an explorative view that generates the comprehension of alternative outcomes and associated consequences with a general awareness of the need for modernization and agility the cadastral system.
- Jamaica's Cadastral System can be considered mature, characterized by age-old traditions and entrenched practices (Enemark, 2009).
- The hypothesis is that cadastral systems evolve with time to ensure their functional relevance and provide optimum service to society's burgeoning needs (Krigsholm, 2020).

Introduction

- The Jamaican context (SIDS) highlighted the climate emergency, identifying climate action as a crucial future signal.
- Competition for land, particularly in Central Business Districts (CBD) and safe zones influenced informal settlements.
- Cost of technical and legal fees contributing to lack of tenure clarification, security, informal settlements, informal subdivisions, and land conflicts.
- Gap between geospatial technology and legislation (UAV & GNSS)
- Outdated technical resources employed in academia were also highlighted as a problem.
- NLA has central role in recordation of interests in real property.

Implication of Change Issues

- Technological advancement will influence workflows, efficiency, cost, and accuracy of cadastral information from the perspectives of data users and collectors.
- The temporal aspects of cadastral information are projected to increase due to the need to monitor land resources.
- Electronic Land Registration System (e-titling) aims to improve the efficiency of land registration.
- User needs assessment must be contrasted to the cost of a 4D cadastre due to the economic reality of Jamaica.
- Ho et al. (2018) cautioned that the lack of direction could impede investment in this direction, as it remains unclear what entity should initiate the actions toward a 3D or 4D geo-information system in Jamaica.

Futuristic Development

- Digitalization of cadastral submissions should be progressed as a key pillar of the cadastral system. Jamaica should augmented automation, especially in checking cadastral plans.
- The Digital Ecosystem will require data protection from global cyber security threats. Jamaican policymakers crafted Draft Data Protection Act.
- Stakeholders' perception may create resistance within the system (Krigsholm, 2020). The necessary interventions will require some degree of change management in reshaping the perceptions and fixations of the past.
- Development of mobile applications may supplant the existing electronic services and transactions. Customer service must consider service modalities rather than solely service delivery standards driven by technological advancement.

Futuristic Development

- Automated maintenance and updating of the cadastre will require capacity building of the staff. These critical inputs will require significant funding from the Government of Jamaica (GOJ).
- Legislative changes to address the surveying standards which affect the survey methodology, which consequently impacts the cost of describing a parcel. The standards for accuracy (urban & rural) of cadastral surveys are expected to be reviewed.
- Jamaica has a homogenous reference framework (Jamaica Datum 2001), so the ambition should include a multi-purpose cadastre to fulfil the operational and strategic mandates of a National Spatial Data Infrastructure (NSDI).
- Time-Series Updating of Geodetic Infrastructure (Active & Passive) & Development of Geoid Model

Divergence of Operational Reality and Legislation

- Unmanned aerial systems (UAS) has not entered the sacred annals of cadastral surveying and is not supported by the Land Surveyors Act of Jamaica. Using a fixed boundary system to delineate and demarcate property boundaries requires a monument at every change of bearing or every 600 feet.

- Technology has outpaced legislation in this regard, making it pertinent to develop a future-proof approach to addressing this issue. The establishment of a boundary system that incorporates innovations meant to enhance efficiency, accuracy, and affordability should be considered.

- The stakeholders must now consider the impediments to complete registration in Jamaica, one of which is economic reality. Jamaica's foray into systematic adjudication, now operated by the National Land Agency (NLA) as the Land Administration and Management Division, has noted successes. The reality of this approach required legislative changes regarding the description of parcels by a map.

Discussion

- Technological advancements will continue to enhance Jamaica's cadastral systems. The required components include legislative reform, data models, geodatabase management, data protection, cybersecurity, actors' perceptions, and, most importantly, the cadastral system's end users and beneficiaries.

- Need to assess the dimensions of the current cadastral system, execute an accurate and realistic future dimension and identify the innovations, rules and actions required to deliver transformative modification.

- The counterarguments suggest that caution must be exercised regarding the shift towards collecting personal data for future solutions, particularly in light of data protection breaches and cyberattacks.

Conclusion

- The pathway into the future will require significant research, consultation, and collaboration to surmount the myriad of challenges of designing and implementing a fit for the future cadastral system in Jamaica.
- The approach's feasibility must be juxtaposed with the legislation and operational realities of academia, private practice and the state.
- Ultimately, policy, education, and strategic development must be harmonized to advance land administration in Jamaica.

References

- Enemark, S. (2009). Land Administration Systems – managing rights, restrictions and responsibilities in the land. Map World Forum, Hyderabad, India, 10-13 February 2009.
- Krigsholm, P., Riekkinen, K., & Ståhle, P. (2020). Pathways for a future cadastral system: A socio-technical approach. Land Use Policy, 94, 104504.
- Ho, S., Crompvoets, J., Stoter, J. (2018). 3D geo-information innovation in Europe's public mapping agencies: A public value perspective. Land, 7, 6.

The most relevant SDGs related to the presentation and theme of this session

1st relevant SDG

2nd relevant SDG

3rd relevant SDG

SUSTAINABLE DEVELOPMENT GOALS

International Federation of Surveyors supports the Sustainable Development Goals

STEP 1: SELECT HERE THE THREE MOST RELEVANT SDGs
STEP 2: COPY THE SDG INTO PREVIOUS SLIDE