

Accelerating Labor and Cost Efficiency in Fit-For-Purpose Data Collection Programs Through Easy-To-Use, Interactive Software and As-A-Service Gns Positioning

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SUMMARY

The volume of undocumented land parcels worldwide is estimated in the billions. In Uganda alone there are currently an estimated 15 million unregistered land parcels that current cadastral government authorities estimate will take Ugandan surveyors 1,000 years to legally register. To register these billions of undocumented parcels, we need to collect a lot more data in a lot less time, and at a lower cost. New approaches are needed. This paper discusses how easy-to-use field data collection software, together with scalable, as-a-service GNSS positioning can accelerate both labor and cost efficiency.

Traditional survey software and hardware have required significant expertise and training. As such, traditional systematic parcel inventory approaches have been constrained by the number of professional surveyors available within a certain jurisdiction as well as by highly-manual processes. The increased availability of easy-to-use data collection software, however, transforms the cadastral data workflow and opens up data collection efforts to a much broader labor force comprised of non-professional surveyors.

Using an interactive, map-based user interface, the surveyor can save time by avoiding the collection of redundant points. He/she collects each point just once and then connects them on the graphical interface to form the parcels. He/she can capture not only geometry but also geo-related attributes in one step. Using the map-based parcel editor in the field, the surveyor can feel confident that he/she has captured all of the data and captured it correctly. As a result, the need to correct errors in the office and return to the field is reduced. These workflow innovations enable professional surveyors and non-professional surveyors to work together and collect data more efficiently. Moreover, adjacency relationships of parcels and property can be directly incorporated into the field acquisition process through a collaborative approach, thus improving trust and

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fostering community engagement.

In land administration, particularly in large-scale, systematic programs to improve parcel inventories and digital cadasters, there is always a tension between speed of collection, accuracy of collection, budget, workforce skills, and equipment inventories. While some accuracy constraints can be anticipated (rural quality standards vs urban quality standards), in other cases, the required rigor can be hard to predict. With the advent of the digital antenna and the soft-GNSS receiver (where the position processing happens in software on consumer hardware rather than in firmware on dedicated electronics), positional accuracy is liberated from traditional GNSS hardware constraints. Within a positioning-as-a-service model, accuracy is flexible, rather than fixed, and can be adjusted on demand, according to the demands of the application and the environment. This flexibility enables parcel inventory efforts to be initiated at lower cost and scaled as needed.

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