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ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 25-29, 2019



DEPLOYING TITLING AND CUSTOMARY LAND REGISTRATION SYSTEMS WITH A BLOCKCHAIN ELEMENT

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**Paper prepared for presentation at the
“2019 WORLD BANK CONFERENCE ON LAND AND POVERTY”
The World Bank - Washington DC, March 25-29, 2019**

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Abstract

Medici Land Governance, working with communities and governments, has written systems to gather ownership claims and also to register titles with governments. We describe the work in Zambia for a systematic titling project, which includes features for transparency using a public blockchain network. We then describe an approach that applies to customary land, where the communities are able to assert their ownership and later verify their claims on a public blockchain in a semi-public way; this approach requires smart-phones and thus currently applies to areas outside Africa (eg. Peru), but it allows for independent affirmations. We will discuss the designs and tradeoffs for these systems, mostly from an engineering point-of-view but including lessons learned in policy and logistics.



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Key Words: blockchain, customary land, mobile

Public claims & confirmations by individuals establish community claims, and strengthens them. Individuals make cryptographically-signed claims (with public IDs or anonymous IDs), then individuals confirm other claims, and group endorsement can be derived.

In Wyoming, we will publish all records in Teton County (including names, etc).

In Zambia, we gathered systematic ownership info, and will publish the final title summary. After gathering ownership claims via enumerator surveys, there is a period of public review at a scheduled meeting location. This can be gathered independently via an app instead. Those confirmations can be signed cryptographically and stored with public location data.

This approach can support customary land claims, and publicize group support. The same approach can be used to publicize management roles; if some secrecy is important, this can be accomplished with anonymous IDs or zero-knowledge proofs.

Where this approach can work:

- Public data
- Public exposure and verification is acceptable and desirable

Where this approach doesn't fit:

- Private data
- Frequent, cheap transactions (due to threat of spam)
- Data elements that could be abused in aggregate
 - Correlation
 - Mass detection
 - Mass surveillance

“Blockchain as Backup” (eg. Wyoming and Zambia)

Benefits

- Open-source, standard BTC-derived network gives accessibility
- Open-source, exchangeable network rewards give more confidence in permanence

Weaknesses

- Databases are simpler (and most registrars are already trustworthy)



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“Individual Claims & Confirmations On-Chain”

Benefits

- Truly egalitarian
- Management systems will be replaced by searching public attestations. Mobile keys will enable this.

Weaknesses

- Smart mobile devices are required
 - Low penetration in Africa
 - Better in Latin America
- Truth requires analysis or off-chain confirmation
 - Spam
 - Bad actors

Lessons in Policy and Logistics

- Get the first one through the whole process ASAP, for technical and policy lessons.
- Must allow time to train & practice.
 - Don't just organize & document. Practice and iterate.
 - Printed maps and lists are hard to search.
 - Apps can be impossible if the search isn't available.
 - ... and even more so with disparate user devices.
- Cryptographic tools & infrastructure are in their infancy.
- We are betting on mobile.

Final Thoughts

- Policy makers are seeing the benefits, so the future is coming (eg. Rwanda PKI).
- We have not deployed the “Individual Claims & Confirmations” yet, but we will.
 - This includes outreach other players: government officials, miners, neighboring communities.
- We repeat: get the first one through the whole process ASAP, for technical and policy lessons.