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Moving to the Smart Land Registry as a fundamental underpinning for adopting blockchain

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Executive summary

There has been substantial noise in the media about the viability of blockchain as a technology that can revolutionise business interactions, especially in the domain of land administration. In this paper we propose that there is significant value and opportunity to be had by adoption of blockchain, but that this adoption must be predicated on moving to what we term "The Smart Land Registry", where tenure data is properly codified and land transactions can largely be entirely software driven. This move to a Smart Land Registry and the opportunities for truly leveraging the power of a blockchain based register are, we argue, something that the nations of the Arab region are uniquely well placed to lead.

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Introduction

Ordnance Survey of Great Britain teamed up with IBM UK to look at how blockchain can present real value in the domain of Land Administration. Though dramatically over-hyped and the subject of much misinformation, we see the technology as enabling, in terms of raising trust levels between citizens and government, creating smooth information flow between government and non-government parties, and opening interesting opportunities for cross-border and high-liquidity land markets.

Here we are able to lay out a value-focussed roadmap towards useful adoption of blockchain, but starting with a firm foundation we call the "Smart Land Registry".

Experience from land authorities

Having worked with a number of land authorities across the planet and in GCC countries, we are seeing a move from simply being the holders of the record of legal rights

associated with parcels of land to a place where digital services will be offered that support greater speed and efficiency in the execution of registration and land transactions.

However, it remains the case that we have frequently seen – especially in countries with a long legacy of "classic land registry" and with less aspiration to lead than the GCC - legal rights described in text and coupled with "dumb maps" showing the extent of the title and the rights, restrictions and responsibilities as coloured tints and edging.

Figure 1 Excerpt from HMLR title plan

Removing the (sometimes lengthy) legal process of negotiating a mutually acceptable understanding of the title is critical to enabling the frictionless and high efficiency land transactions that a modern economy relies on. Achieving this necessitates a move to something we call the "Smart Land Registry".

Towards the "Smart Land Registry"

We define the "Smart Land Registry" as a machine-readable registry of land titles where rights, restrictions and responsibilities are codified into data structures that are queryable and supportive of entirely software-driven land transactions without human intervention.

The advent of standardised data models such as LADM are enabling this move towards the Smart Land Registry, and enable jurisdictions to get away from the "dumb tinted maps" of the past and toward properly define geometry for spatial extents and codification of rights.

Software-driven land transactions – raising trust in validity of transactions

The Smart Land Registry of the future will be one where, for the majority of straightforward land transactions the transaction is dealt with entirely in software, with contract exchange and transfer of ownership happening automatically, using digital signatures to verify the identity of the participants in the transaction, and indeed we see the GCC countries already moving in this direction.

This concept sits nicely alongside the blockchain story. Though the subject of much over-hyping, we believe that there are sound reasons to employ blockchain within the Smart Land Registry.

There are a number of land conveyancing systems that now leverage blockchain to enable a transaction to take place between two parties. However, the interaction of those parties and the land authorities that actually records the legal rights of ownership remain largely unchanged – making the blockchain based contract exchange largely cosmetic.

A few forward-looking countries have adopted a blockchain based land transaction recording system, but even here, the basic model of engagement between the participants in the land transactions remains essentially unchanged with the land authority simply recording the transaction on-chain. So saying, we believe that taking this step is often necessary from a perspective of gaining learning and laying a foundation for future evolution.

A blockchain based Land Authority

We see that evolution to the Smart Land Registry underpinning a move to a new engagement model for land transactions, where land rights are tokenised such that digital ownership of the token equates in law to the ownership of the land or property.

The contracts associated with land transactions would be built as Smart Contracts (a contract defined in code rather than in natural language), where participants in the land transaction are required to digitally sign their part of the smart contract that defines the transaction to take place. The actual execution of the contract, resulting in the ownership transfer taking place, only happens once all parties have signed and once the land authority has validated the transaction.
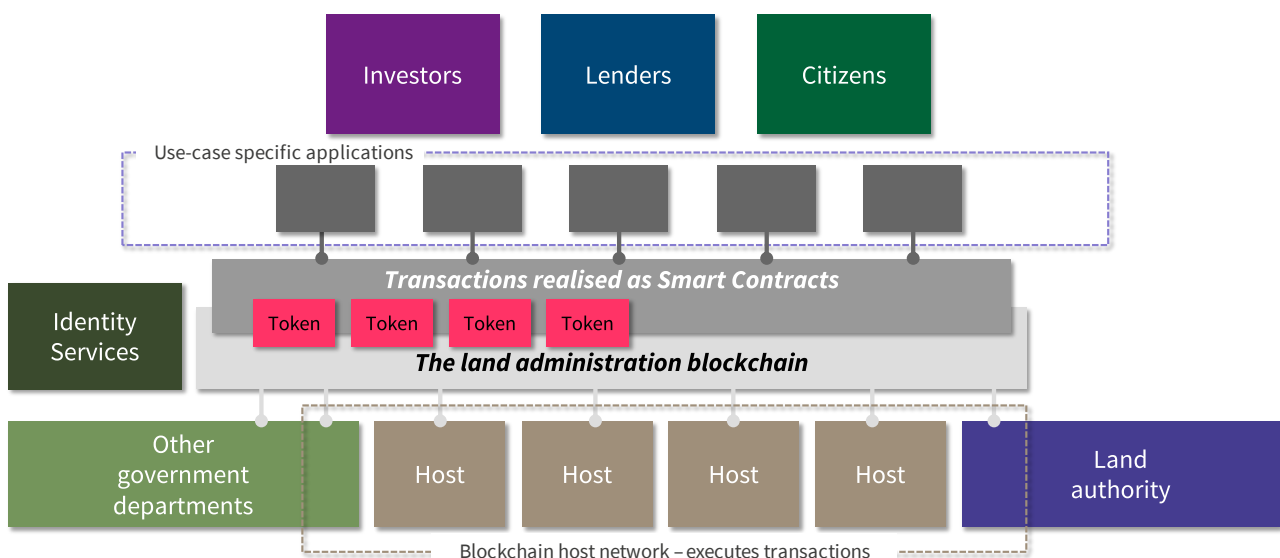

Figure 2: A blockchain based land authority

Such a move is predicated on the prior move to the "Smart Land Registry" – something that Arab lands are uniquely well placed to do – the well-defined and fully operational citizen identity schemes, legislative agility and innate desire and ability to be world-leading place the nations of the region in an excellent position to take advantage of the opportunities this technology presents.

Using blockchain to carry out this kind of transaction places its execution "in the public view" rather than have it take place behind the closed doors of the land authority – something that can raise the level of trust between the citizens and the land authority.

Furthermore, this approach has the side effect that the network of organisations that physically host and operate the blockchain, by definition, validators of the transaction that takes place – the transaction must take place within the rules of the market for the blockchain network to accept the transaction onto the chain: the blockchain network acts as third-party validation of the transaction's validity.

Cross-border and fractional investment

The land market is traditionally seen as one with low levels of liquidity due to the slow speed and large-grained nature of land transactions. Furthermore, foreign investment in land is dependent on the foreign investor's confidence in the land authority that will manage their rights to land.

To these points, traditionally land authorities are not set up to support rapid and fractional investment due to the nature of the title and the manual effort associated with recording the owner's right to their ownership; and they are also not set up in a manner that allows the remote purchaser to have their ownership rights recorded somewhere that is mutually acceptable to both them and the local seller.

Blockchain presents value for both these issues, and is a key enabling technology for a high liquidity land market where international investment is enabled in a mutually trustworthy fashion.

We see a future where a software-driven land market is created, and the Smart Land Registry owns the right to create software-based land transaction contracts and sets the rules of the market. Their role will be one of validating transactions and stepping in on the occasions where the transaction cannot take place automatically, together with being one of the parties hosting the blockchain itself.

Authorised organisations, both in country and on foreign soil will be invited to co-host the chain and act as third-party validators of transactions – enabling foreign investment to take place in a trusted manner as the transaction is executed and recorded in both the countries where the land lies and where the investor lives.

The lodging of fractional rights directly with the land authority creates a finer-grained market where investors can own and benefit from portions of a property with their rights guaranteed – and, for that matter, where liability for taxation can be identified.

This future is some way off – creation of a Smart Land Registry is in itself a significant and strategic effort for a land authority. However, over time the benefits of the increase in the land market's liquidity and the steady increase in trust and reliability of land transactions will pay huge rewards.