

**Presented at the FIG Working Week 2016,
May 2-6, 2016 in Christchurch, New Zealand**

Blockchain/Bitcoin Functionality in Land Administration

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TS01A - Visions and Trends in Land Administration
Commission 7

Christchurch, New Zealand, May, 3rd, 2016



Session #1 - Surveying the future: Mapping the bitcoins

MONDAY
18 MAY 2015

Is it possible to publish a land transaction completely transparent, secure, legal, open and reliable using bitcoins?!

14:00 – 15:30

Hall 7.1 / 7.2, NPC

Everybody is welcome!

In this session we apply the principles of the innovative and game-changing concept of bitcoins and the blockchain. You never heard of it before? But you are curious to learn more. Then this is the session to be! Instead of using bitcoins as a tool for currency transactions, why not use it as tool to register the transaction of property. Google Maps for the cadastral mapping, LinkedIn for the Legal Register and Bitcoins for the transactions...? Imagine what happens if you see one square meter in a land transaction equal to a bitcoin. This sounds impossible to you - it doesn't to us! Within this session we want to challenge all surveyors, young and experienced, to verify how bitcoins and blockchains contribute to the challenges in land administration. We want to introduce the idea and the concept and then further want to get to know your experiences and input on how the realisation could look like.



Blockchains

The great chain of being sure about things

The technology behind bitcoin lets people who do not know or trust each other build a dependable ledger. This has implications far beyond the cryptocurrency

Oct 31st 2015 | From the print edition

WHEN the Honduran police came to evict her in 2009 Mariana Catalina Izaguirre had lived in her lowly house for three decades. Unlike many of her neighbours in Tegucigalpa, the country's capital, she even had an official title to the land on which it stood. But the records at the country's Property Institute showed another person registered as its owner, too—and that person convinced a judge to sign an eviction order. By the time the legal confusion was finally sorted out, Ms Izaguirre's house had been demolished.



The Economist

It is the sort of thing that happens every day in places where land registries are badly kept, mismanaged and/or corrupt—which is to say across much of the world. This lack of secure property rights is an endemic source of insecurity and injustice. It also makes it harder to use a house or a piece of land as collateral, stymying investment and job creation.

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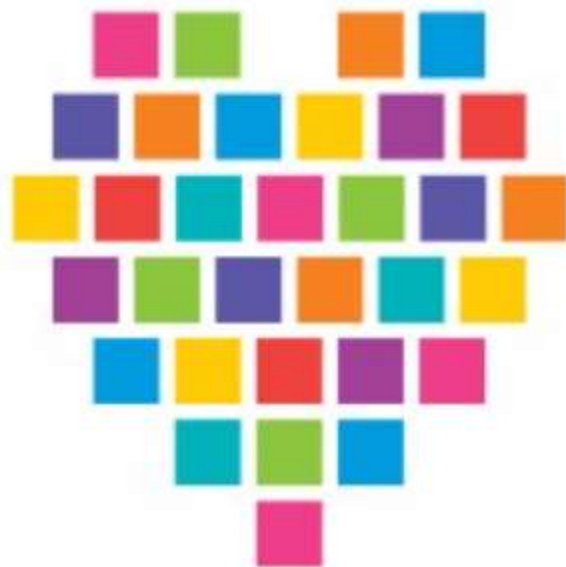
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Re:START

What is blockchain?

- Organisational concept: no need for trusted third parties – processes are controlled by participating individuals;
- Design concept: creating a reliable and verifiable administration of transactions using a network (e.g. internet);
- A technology: a technical (decentral) solution for situations where several parties may perform transactions



A transaction is about

- Trade
- Currency
- Trust

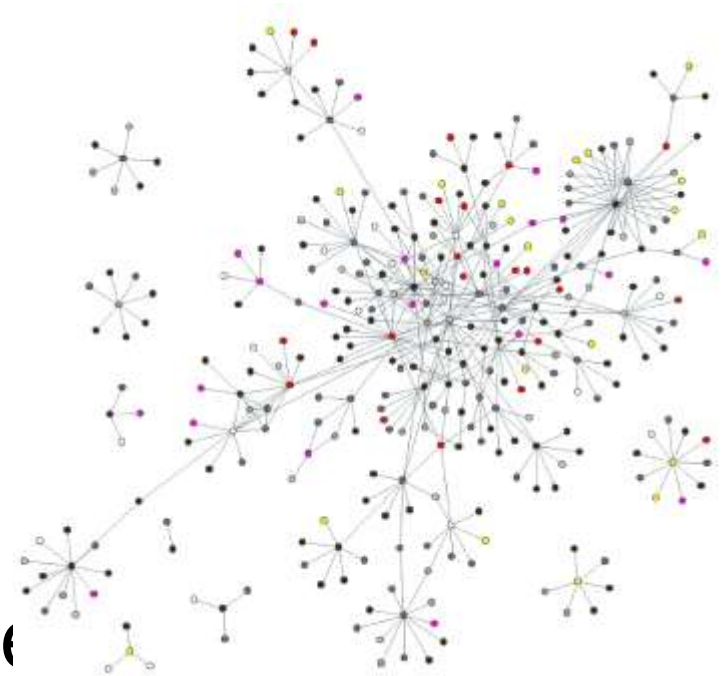


Bitcoins: Most important facts

- Open source
- Digital currency
- Decentralised system
- No bank or institute required
- Transaction verified by network of multiple users
- Transaction is recorded in a public ledger (block chain)
- Maximum number: 21 million

Blockchain: one single source of truth

- All transactions are logged
 - Time
 - Date
 - Type of transaction
 - Amount
- It is public
- Everybody can access the
- Multiple users verify
- There is only one version, one truth



<http://cryptogeld.net/uitleg>

1 Bitcoin

- 100.000.000 units with unique id
- Each unit is programmable
- Each unit can represent (a different) property
- Unit can be specified / labelled

1 bitcoin

- Money
- Share in a company
- Energy
- Certificate of ownership
- Oil
- Votes
-or land!



Challenges in Land Administration

- 70% to be done
- Complex institutional setting
- Corruption / Transparency
- Automation
- Trustworthy Parties
- Trend: decentralisation



Impact

- Everybody can see all transactions
- Locations are linked to units of transactions

1 bitcoin = 1 sq land unit



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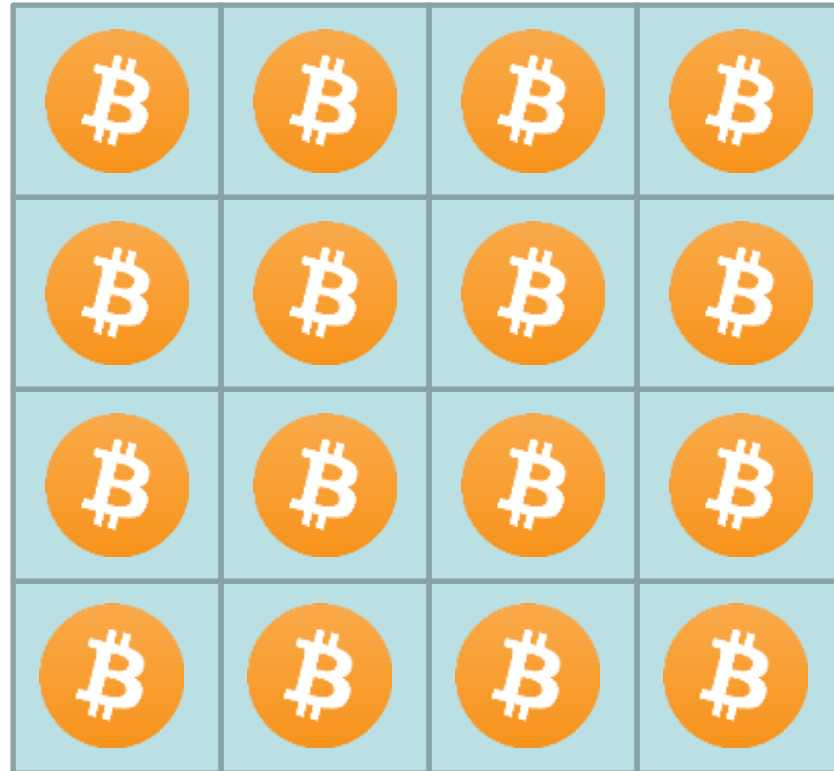




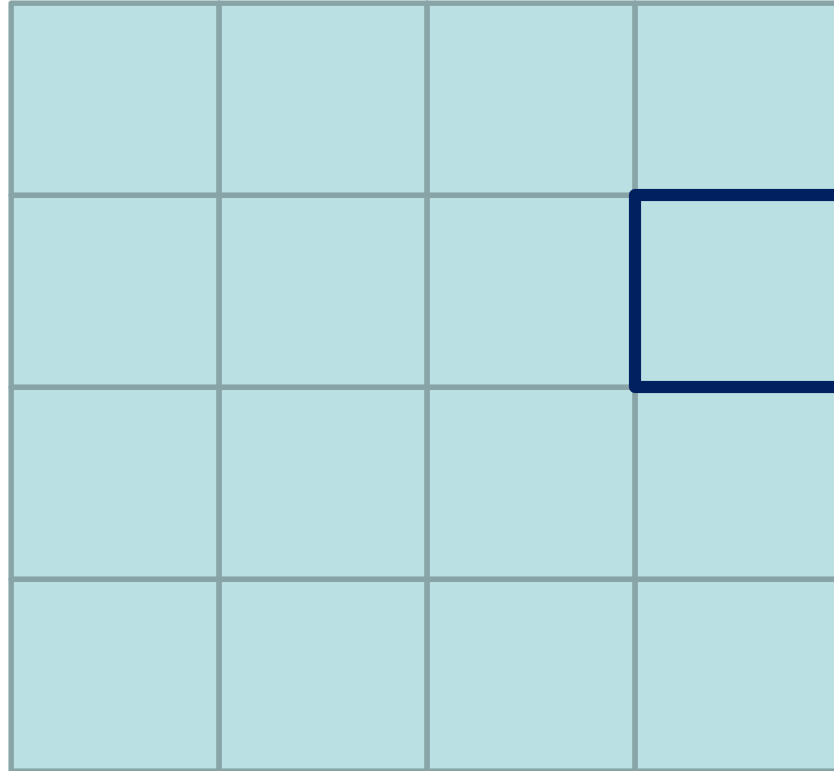
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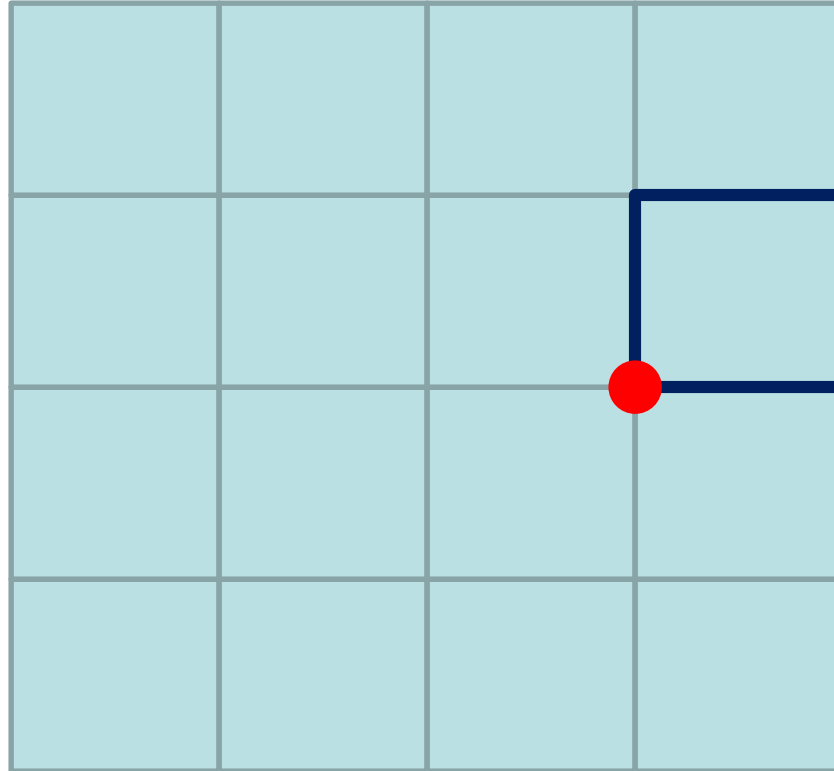
Grid



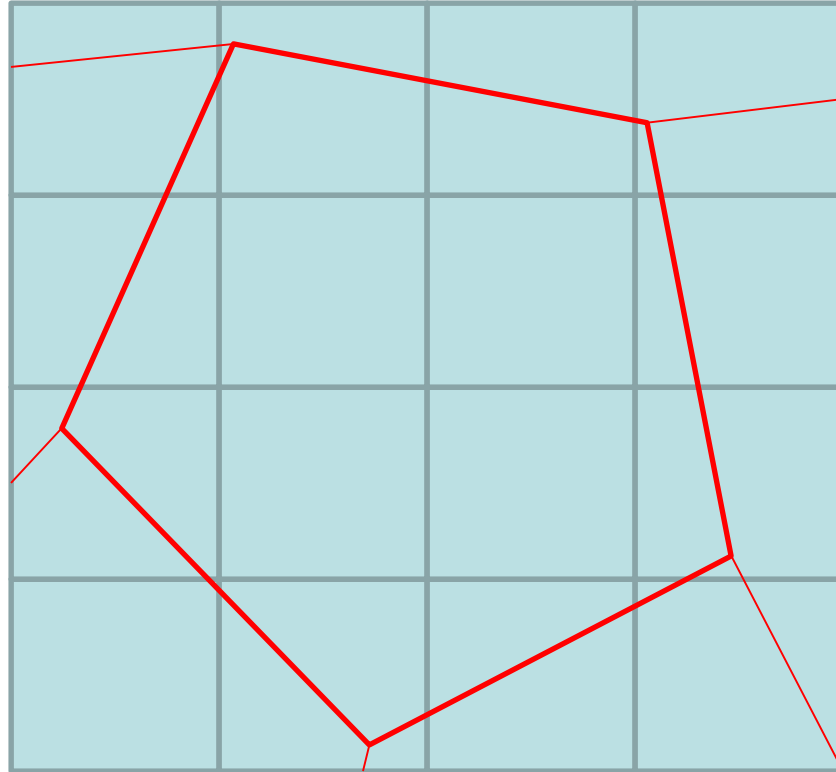
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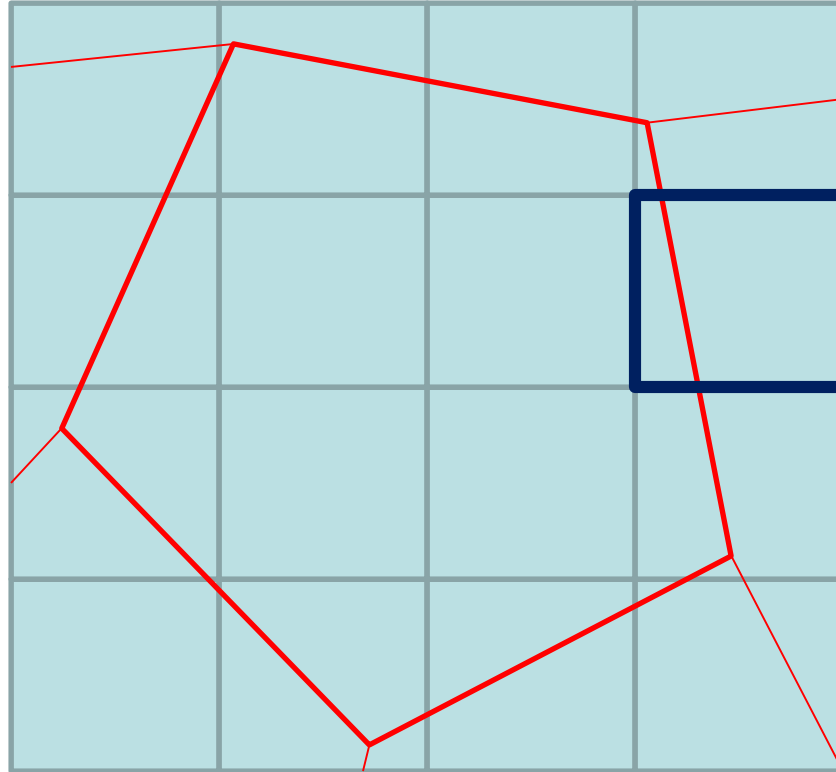
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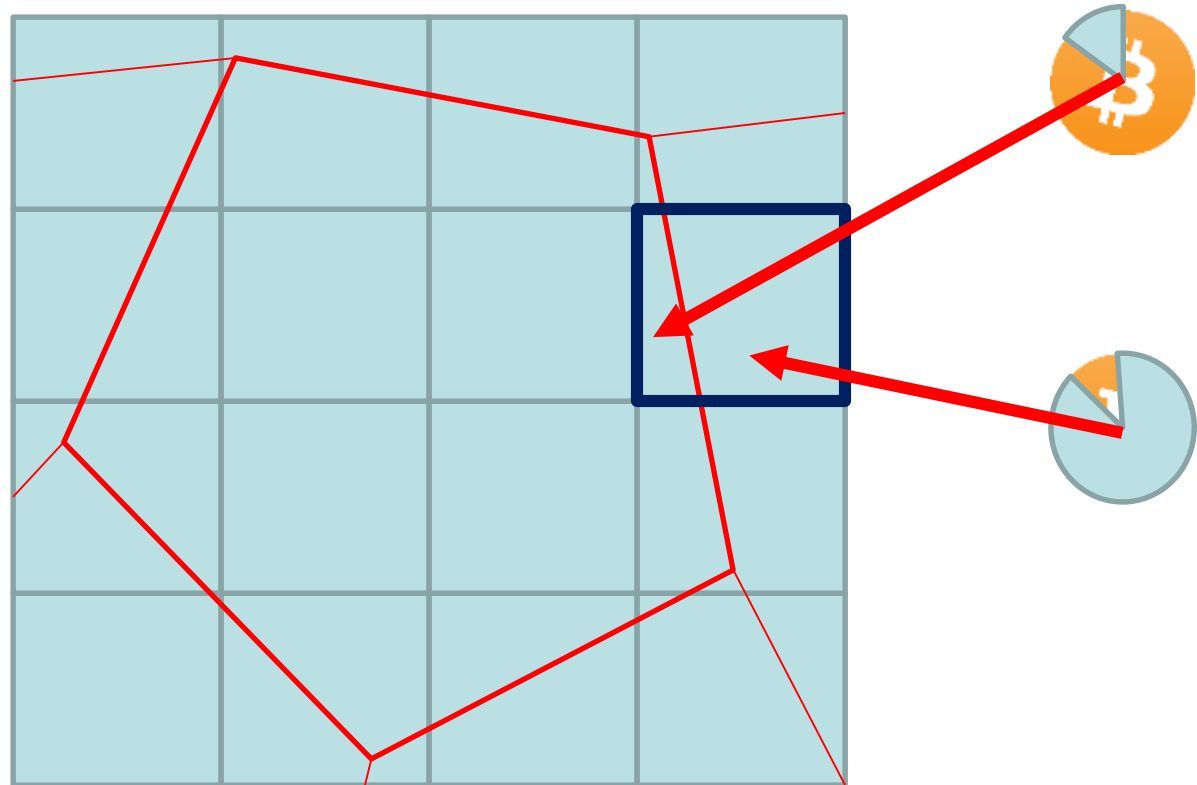
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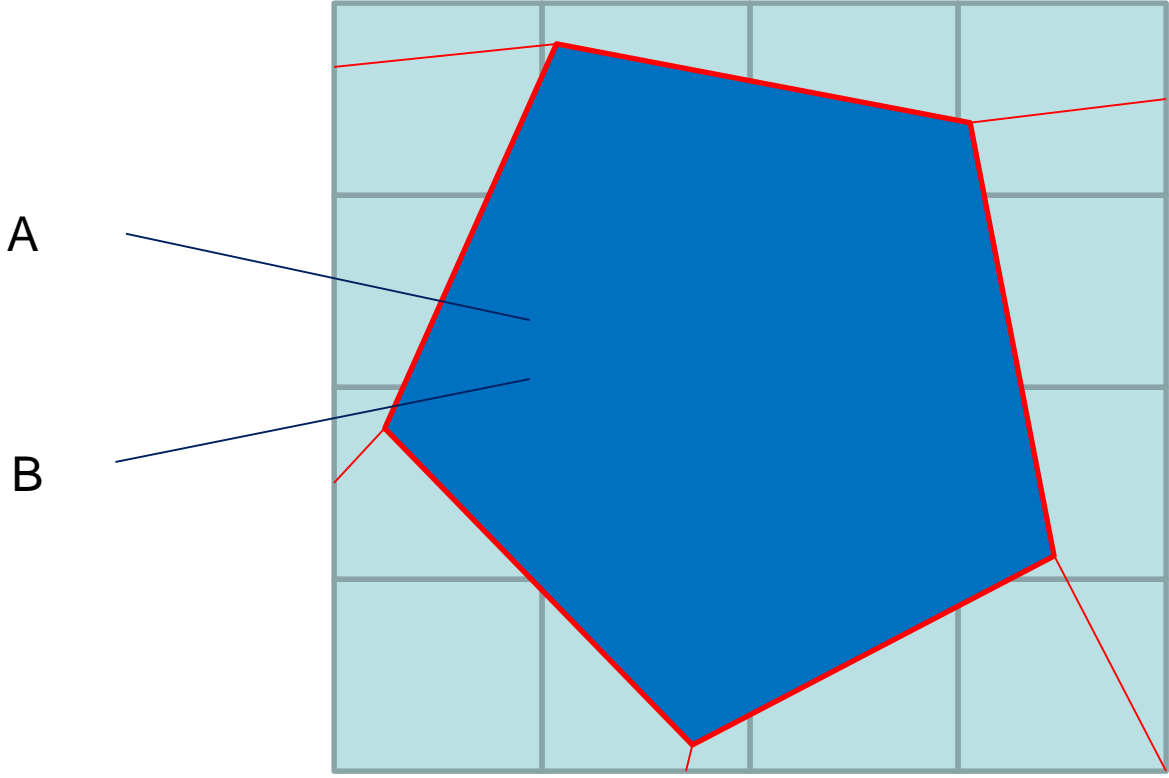
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Parcels



Transaction

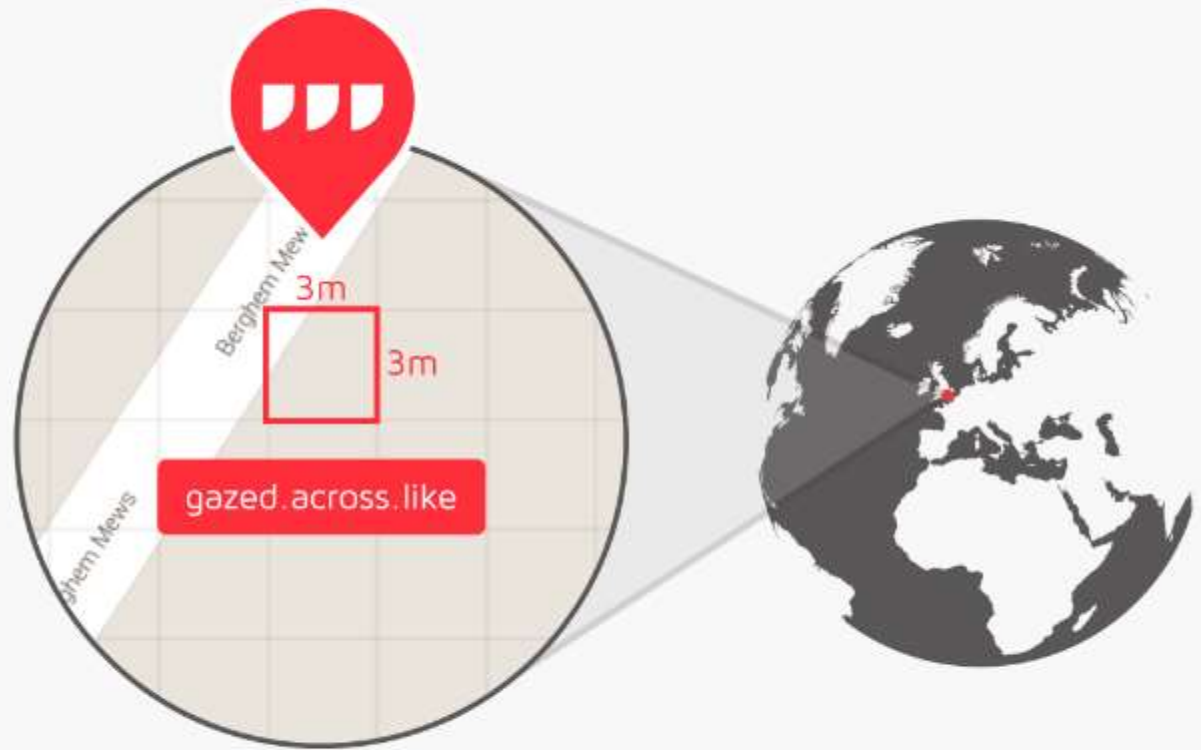


what3words

what3words.com/

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Addressing the world
Everyone and everywhere now has a simple address

what3words

what3words.com/

- what3words is a global grid of 57 trillion 3mx3m squares.
- Each square has a 3 word address that can be communicated quickly, easily and with no ambiguity.
- Our geocoder turns geographic coordinates into these 3 word addresses and vice-versa.
- Using words means non-technical people can accurately find any location and communicate it more quickly, more easily and with less ambiguity than any other system like street addresses, postcodes, latitude & longitude or mobile short-links.

ung and UT Austin developing centimeter-accurate smartphone GPS!?We have done a lot of testing with...



Groups



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Melanie Langlotz

Business Development Manager at Augview

what mobile devices your company chooses to use and are you connecting any GPS gear to your mobile...

[View Discussion](#)

Contribute to active discussions

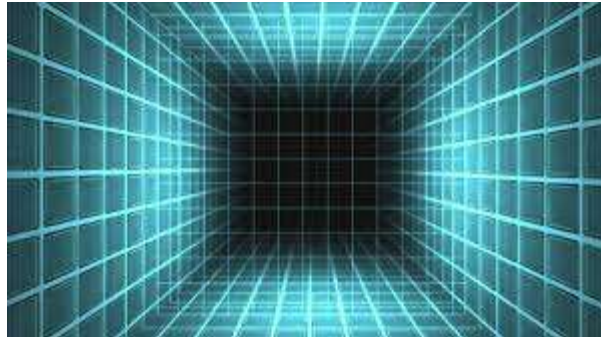
[inquiry for DEM with z-index](#)

Salwa Nabil

Imagine

- Land Rights and right holders at LinkedIn?
- Spatial Units on Google Maps (or:.....)?
- Transactions via blockchains...

Can we use the bitcoin & blockchain as tool to register transaction of land right?



...in any case: have attention to this development...

consultingwhere.com/blog/crypto-cadastre-is-the-future-of-land-administration-written-in-the-blockchain/



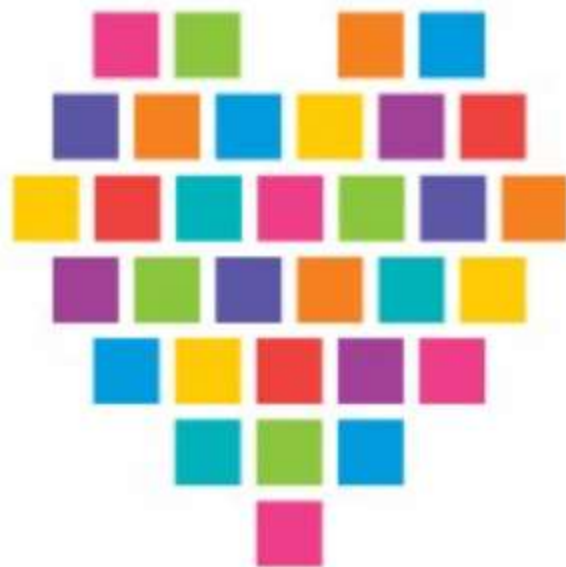
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Crypto-Cadastre: is the future of land administration written in The Blockchain?

In 2008 Satoshi Nakamoto^[1] published a paper^[2] on the cryptography mailing list metzdowd.com^[3] describing a method for preventing double-spend of digital currencies using digital signatures, peer-to-peer networks and a concept called 'proof-of-work'. His idea resulted in the first cryptocurrency Bitcoin, market capitalisation at time of writing 54.2 Billion USD^[4].

The success of Bitcoin generated a slew of imitators and interest in the technology is now extending beyond the field of cryptocurrencies. The distributed public ledger concept central to Bitcoin has become known as The Blockchain and is being touted as a potential replacement for any existing centralised database. Just as Bitcoin is now seen by some as a viable alternative to banks some see The Blockchain as a potential alternative to other centrally administered civic institutions, such as, in the field of land administration, land registries.

Although not mainstream this idea is slowly gaining traction in land administration circles. In May 2015 the Young Surveyors Network of the International Federation of Surveyors (FIG) Working Week ran a workshop entitled 'Surveying the Future: Mapping the Bitcoins', the presentation was prepared by Paula Dijkstra, Christiaan Lemmen, Annet de Boer from the cadastral agency in the Netherlands and by Eva-Maria Unger, chair of the Young Surveyors Network (from the Austrian cadastre).^[5] Around the same time Reuters reported that Honduras is piloting a land registry using Bitcoin technology^[6], while in northern Ghana an organisation called Bitland has begun implementing a land registry and titling protocol using the Bitcoin's Blockchain to timestamp land titles^[7].



Re:START