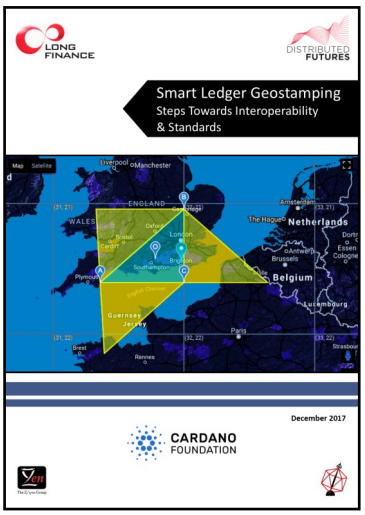
Smart Ledger Geostamping
Steps Towards Interoperability & Standards

The adoption of a limited number of georeferencing structures that have global applicability should ease one area of inter-operability for Smart Ledgers, namely sharing geospatial information.

Overview



Smart Ledgers (aka blockchains) provide a facility for recording immutable transactions. This takes the form of a 'timestamp', a permanent record of computer-based transactions. A natural extension is to add other information, like, for example, a 'geostamp'.

A geostamp is a digital record of the geographic location of a transaction or, in other words, a timestamp with a geographic location attached. A geostamp uses geocoding or georeferencing, the assignment of a unique identification to a place on the earth represented by a point, line, or area.

We are all familiar with certain forms of geocoding, like longitude and latitude, post codes, and zip-codes. However, the adoption of a limited number of consistent geocoding structures that have global applicability could increase interoperability of Smart Ledgers.

Distributed Futures has an open source resource project, GeoGnomo (geognomo.com), to research and share methods for geostamping. Based on the four principal qualities encapsulated in the 'MAPS' acronym, namely, Memorability, Aggregation, Proximity, and Scale, it has developed three methods for geocoding, two of which use rectangular areas, and the other, triangular ones.

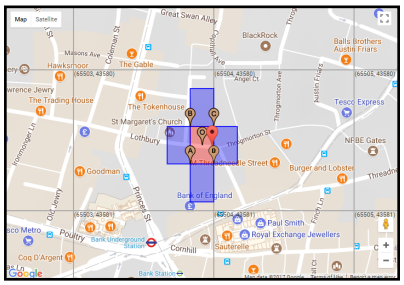
Report Extracts

The principal qualities of a good geocode can be encapsulated in the 'MAPS' Acronym.

M	Memorability	A geocode should be compact and memorable
A	Aggregation	A coding system should be able to describe comparably a variety of area sizes and structures, both natural and human, such as forests, beaches, buildings, sports grounds, country borders, etc.
P	Proximity	Similar codes should represent similar locations, so that people exchanging codes can roughly understand the distance and
S	Scale	Users should have control over the precision

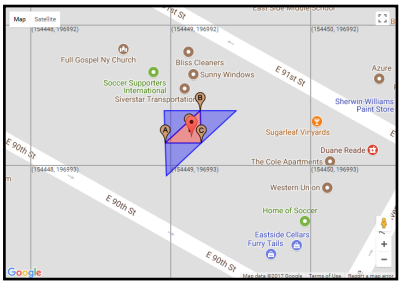
Report Extracts

The **Quaternary Rectangular System (QRS)** divides the globe in eighteen 60 by 60 degree squares, by dividing latitude into 3 bands and longitude into 6 bands, and assigns a geocode to each one. These 18 squares form the grid at level 0 and each can be subdivided with no exceptions. The higher the level, the smaller the area covered by each square.



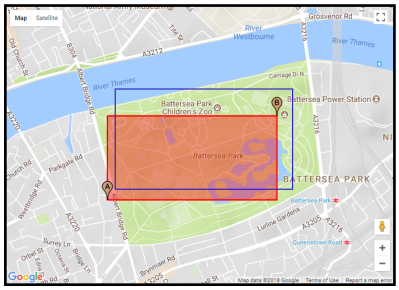
City of London at level 17
QRS:G5V4UW7F-17

The **Quaternary Triangle System (QTS)** divides the globe into a fixed grid of triangles and assigns a unique geocode to each. Starting with an icosahedron that forms the grid at level 0, each of the 20 equal triangles is divided to 4 equal triangles, forming the grid at level 1, and so on and so forth. QTS is very similar to QRS, with the major difference being that one uses a grid of squares and the other a grid of triangles.



Computer Location in New York City at level 19 QTS:E8VQAFJVA-19

The **Variable Rectangular System (VRS)** generates codes from a rectangular area, specified through a 'click and drag' selection to represent the selected area. Once the area has been selected, the approach is to round the coordinate values so that the information can be stored in a code of memorable length, but the 'rounding' is chosen so that the area retains a relatively close approximation to the original. Different levels cannot be specified in VRS been chosen, they are organised in a predetermined way into a numerical code that reproduces the rectangle.



Battersea Park VRS:RUYQ785HM8

Conclusions

Developers and users of Smart Ledgers, and other recording systems, may find that the addition of geocodes from the GeoGnomo project help to simplify human-system interaction. The use of geocodes reduces human error and eases human data retrieval. GeoGnomo is an ongoing research project and there may well be further geocoding approaches.

Try finding your home's geostamp at www.geognomo.com

To learn more about this and other Distributed Futures projects

www.distributedfutures.net & www.longfinance.net/Publications.html

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