# Improved What3Words

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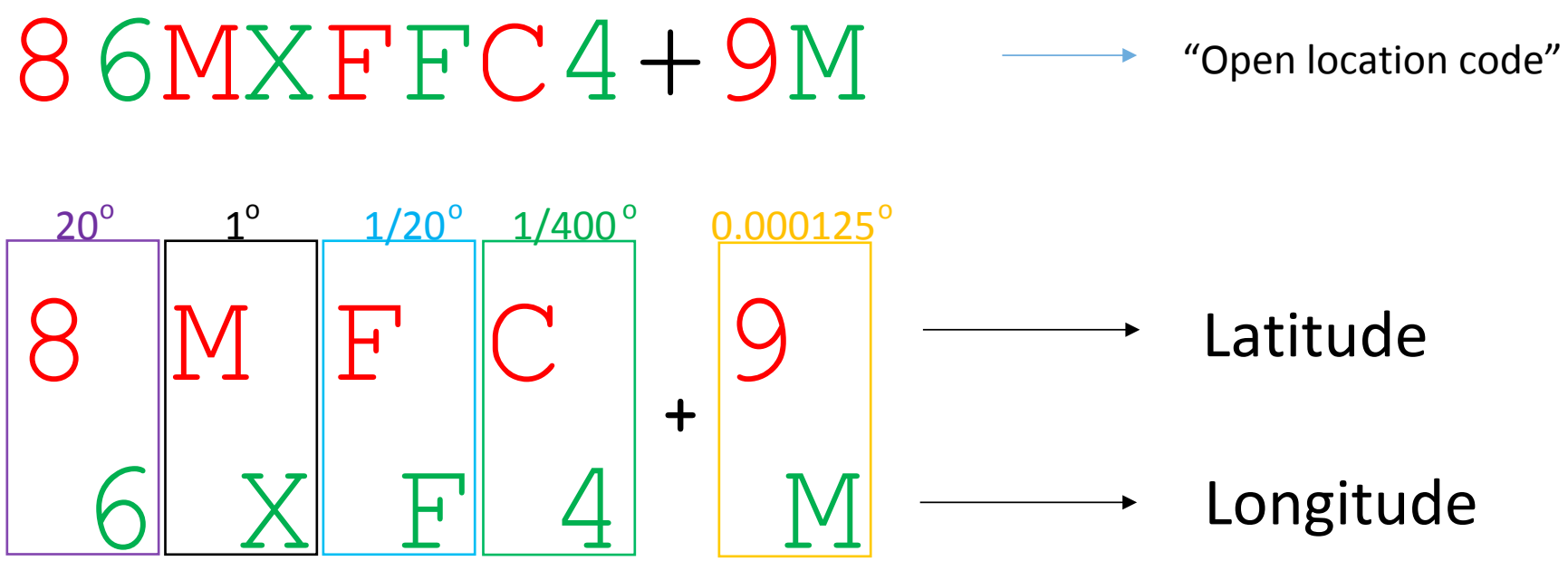
# Background: “What3Words”

- Many places have no address or easily memorable location
- “What3Words” is a company which developed a global “addressing” system based on using three words to uniquely identify every 3m x 3m location on earth
- For example, the location of the STC is called “error.treating.movement”

# Limitations of “What 3 Words” approach

- Fixed precision – always 3m x 3m
- Not hierarchical
- Secret algorithm
- Requires an app and internet to be useful
- Names give no clues for navigation
- Not translatable to any other location/addressing scheme

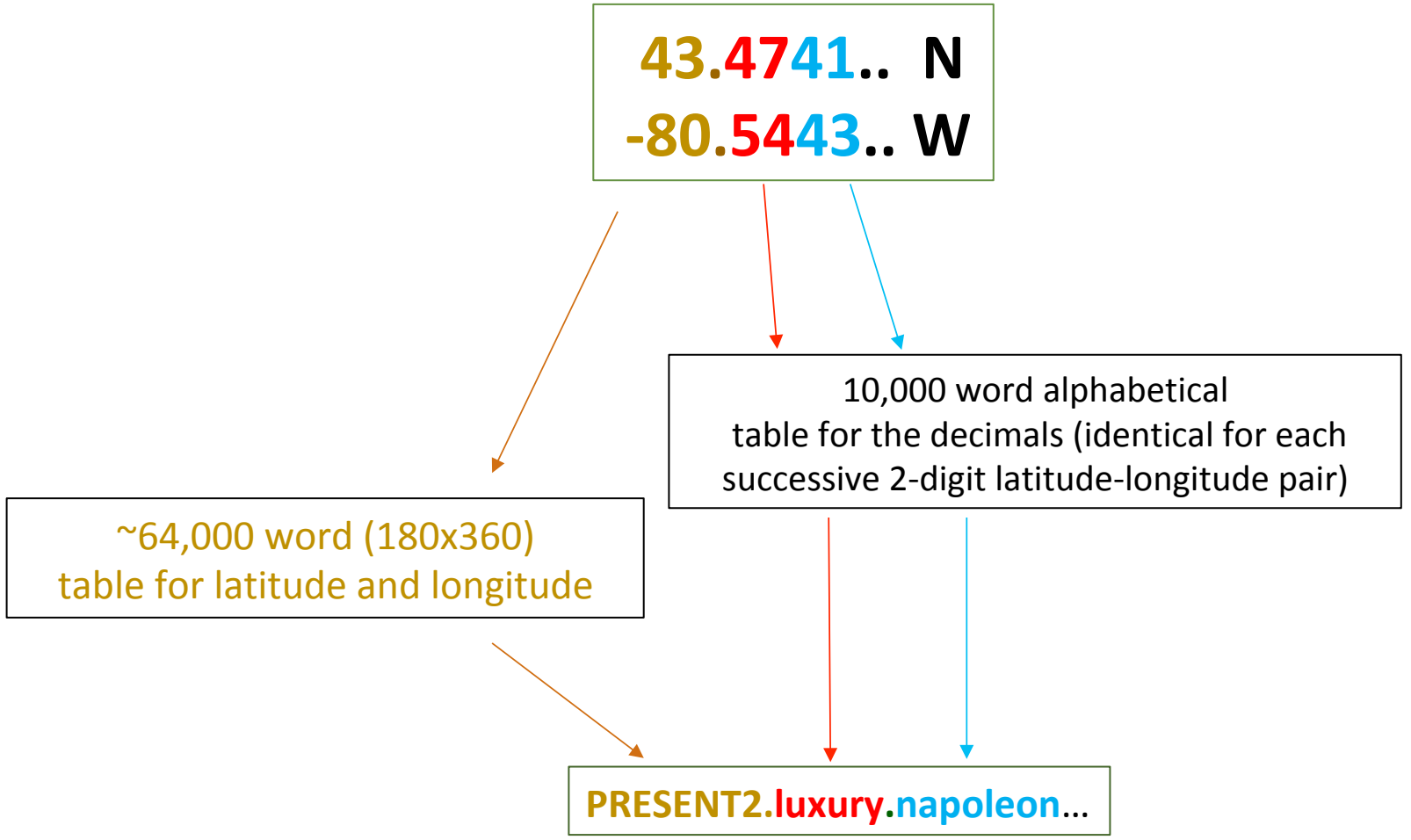
# Google “Plus Codes” encode a grid decreasing 20-fold with each digit




Alternatively, just the last 6 digits with a city and country:

`FFC4+9M, Waterloo, ON, CANADA` is a Google “Plus Code

# “Waterloo Naming System”

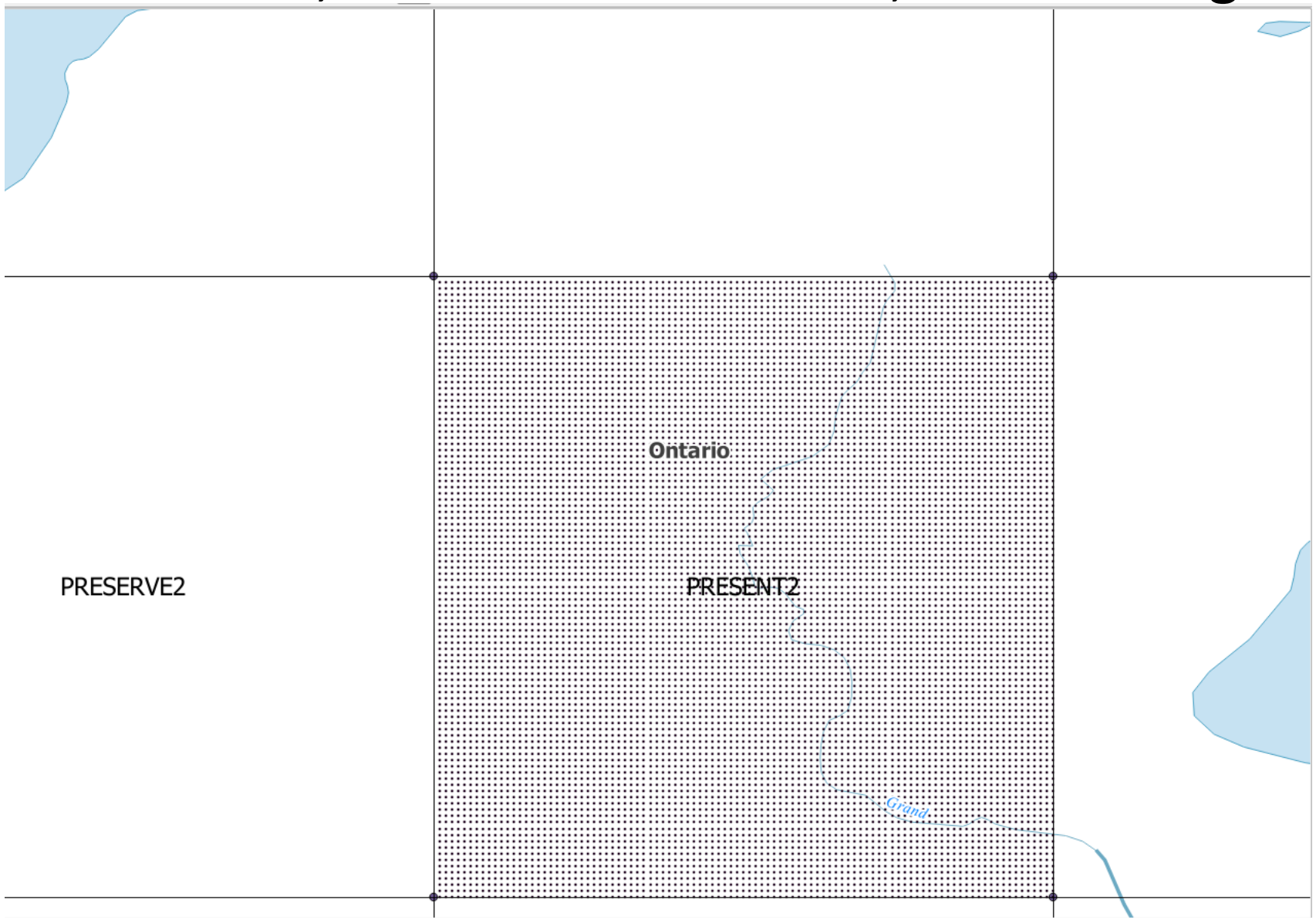



| Lat | Long | Combo | Word |
|---|---|---|---|
| 00 | 00 | 00_00 | zucchini |
| 00 | 01 | 00_01 | zoological |
| 00 | 02 | 00_02 | zoology |
| 00 | 03 | 00_03 | zoo |
| 00 | 04 | 00_04 | zoning |
| 00 | 05 | 00_05 | zones |
| 00 | 06 | 00_06 | zombie |
| | | … | |
| 41 | 43 | 41_43 | napoleon |
| | | …. | |
| 47 | 54 | 47_54 | luxury |
| | | …. | |

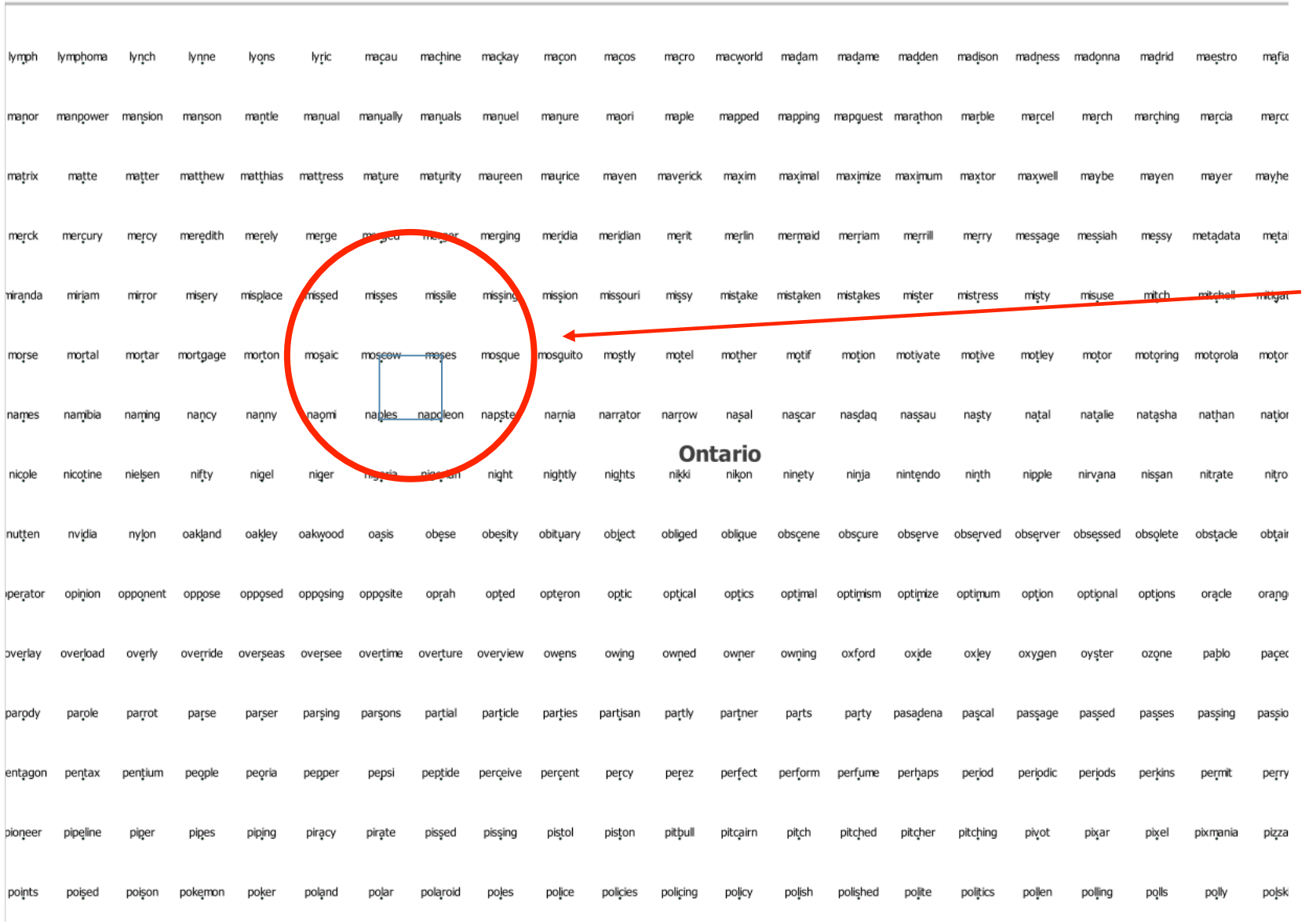
# Iterative naming example

43 N, -80 W
=
"PRESENT2"

# Divide into 10,000 named locations, and then again



# Our building




43.4741 N, -80.5443 W

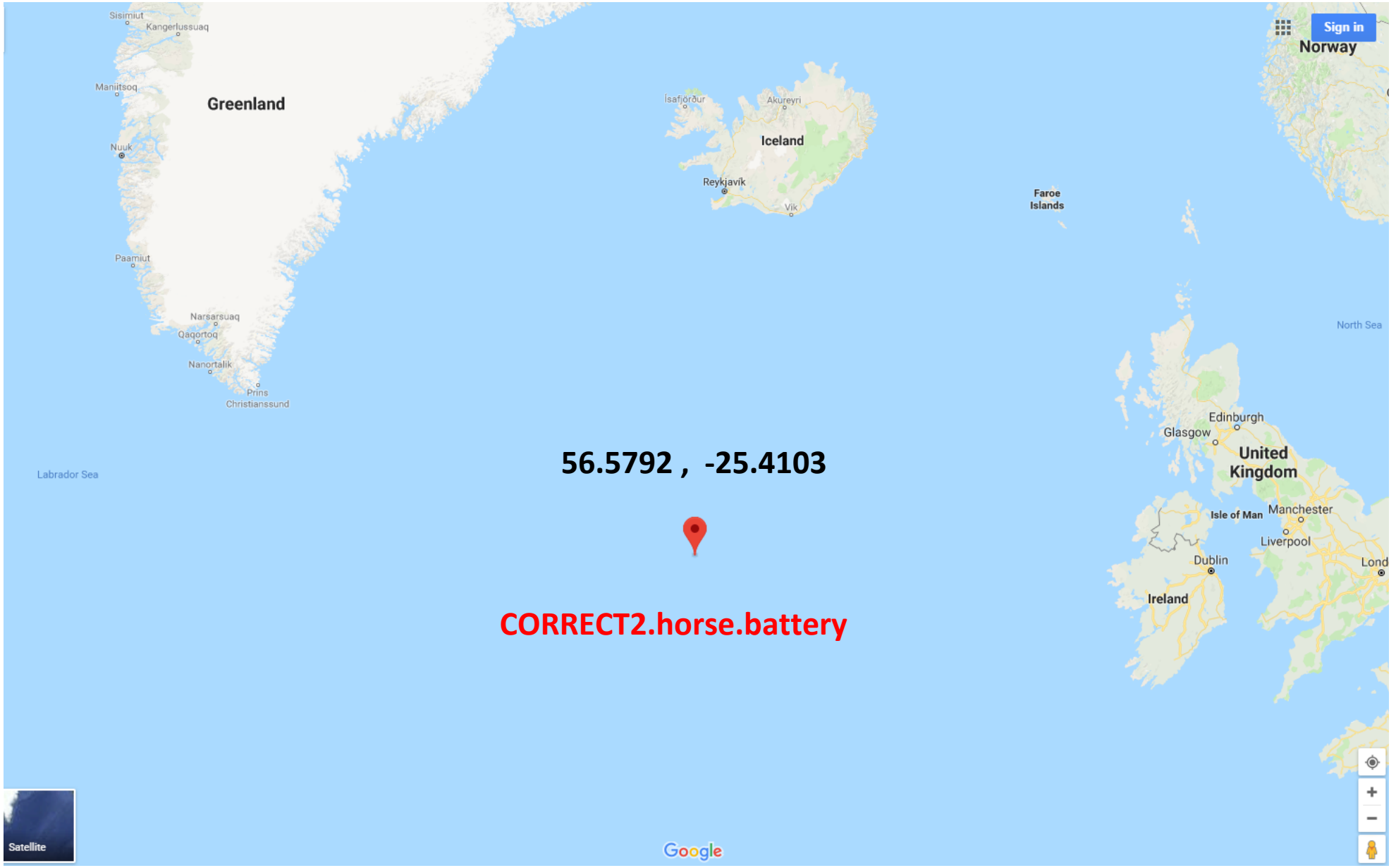
=

“PRESENT2.luxury.napoleon”

# A systematic “human friendly” location naming system which is:

- hierarchical
- expandable to any resolution
- simple and public domain
- fits on a few pieces of paper
- globally unique and unchanging
- Very easily translatable to traditional location schemes

# Which is easier to remember?



# Acknowledgements


- Richard Harrigan
- Peter Deadman

# Google Plus codes are not really better than latitude and longitude

A complete “Open Location Code ” like `86MXFFC4+9M` is not useful for humans

Removing the 86MX and “Shortening” to `FFC4+9M, Waterloo, Canada` is still not very useful for humans, AND now this is not unique, requires a search to discover the complete location, and is subject to changes over time

The latitude and longitude **43.4709, -80.5433** are also not really useful for humans
The google approach is equivalent to “shortening” the decimal latitude and longitude location by removing the starting digits 43, -80; leaving:

4709, 5433, Waterloo, ON, Canada

(or 45740393, Waterloo, ON, Canada)

The “Plus code” has saved only a single digit over just using the latitude and longitude - but at the expense of obfuscating the simplicity of latitude and longitude, AND being dependent on possible changes in political names and borders!

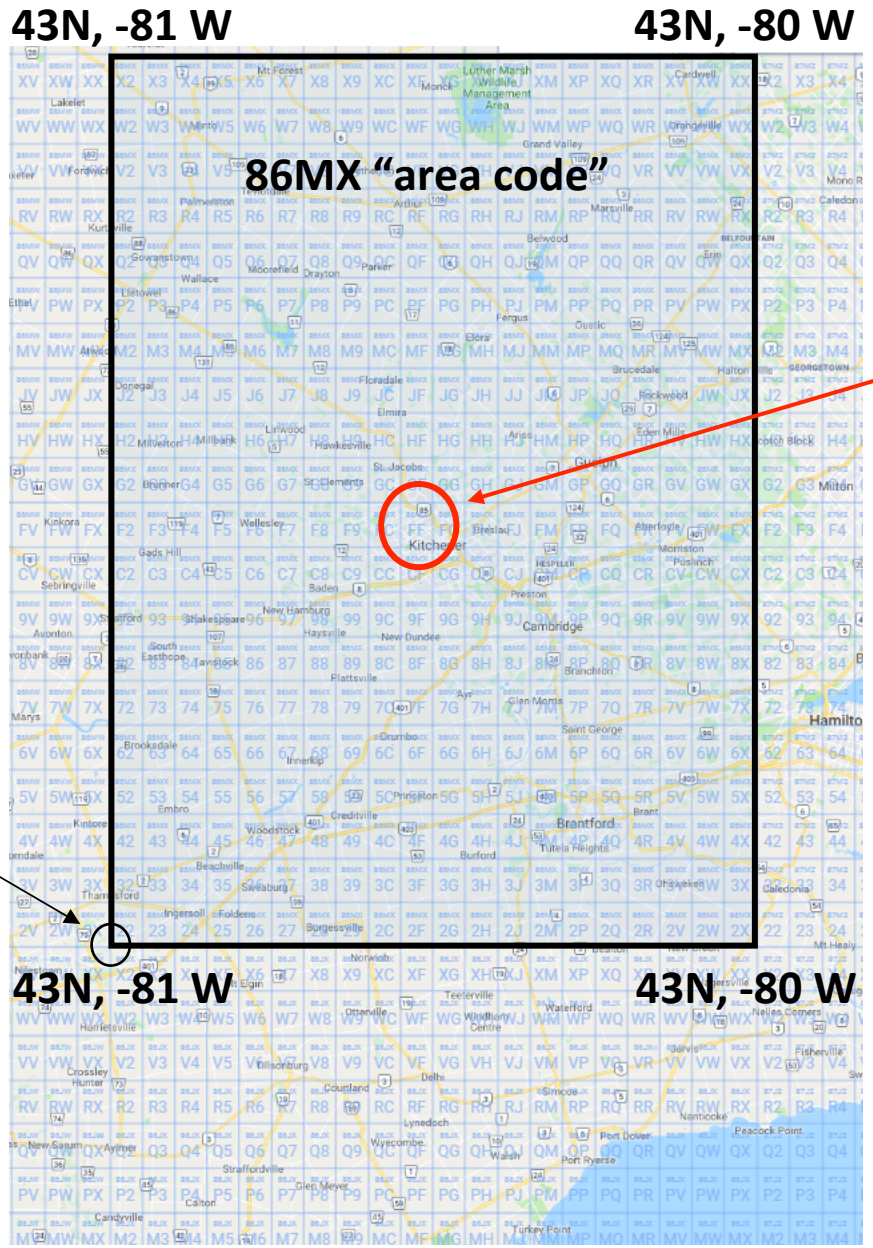
# A fatal flaw in “Plus Codes”?

- In addition, referencing to the latitude and longitude grid nearest a given city (in this case, located at 43,-81) means the “Plus Codes” for

```
FFC4+9M, Waterloo, Canada,
FFC4+9M, Kitchener, Canada,
FFC4+9M, Guelph, Canada,
FFC4+9M, Brantford, Canada
```

all refer to exactly the same physical place (!). This could be extremely confusing.

- One can only imagine the issues this leading digit truncation would cause, as cities are not unique. This seems like a terminal flaw in the Plus Code approach.




The “Origin” (86 MX) is the same for Waterloo, Kitchener, Guelph, and Brantford

The FF section of “area code” 86MX is the same for Waterloo, Guelph, Kitchener and Brantford, so these Plus Codes all refer to exactly the same place:

`FFC4+9M, Waterloo, Canada,`
`FFC4+9M, Kitchener, Canada,`
`FFC4+9M, Guelph, Canada,`
`FFC4+9M, Brantford, Canada`